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BASAL-CELL CARCINOMA (RODENT ULCER), WITH SPECIAL REFERENCE TO LESIONS ON NECK, TRUNK, AND LIMBS

BY

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[WITH PHOTOGRAVURE PLATE]

During the last thirty-five years 237 cases of rodent ulcer have come under the care of one of us (C. W.) and 210 of these occurred on the face or scalp, while 27 were found to arise outside those confines (Figs. A and B). Summaries of the case histories of these lesions found elsewhere than on the face or scalp are now given.

Umbilical Region (3 Cases)

Case 1.—A man aged 58 presented himself in 1930 with a large rodent ulcer to the left side of the umbilicus. He had first noticed a small pimple in this region some 12 years previously. The ulcer was irregular in outline with a heaped-up and rolled-over edge (Fig. C). The ulcer measured 1½ in. (3.75 cm.) at its greatest diameter, and its base was moist and in some parts covered by small sloughs. There was no enlargement of axillary or inguinal glands. Excision of the ulcer together with the umbilicus was undertaken through an elliptical incision. Recovery was uneventful. Microscopically the ulcer was a typical basal-cell carcinoma. This patient was last seen in 1939, when he was in good health and there was no sign of recurrence.

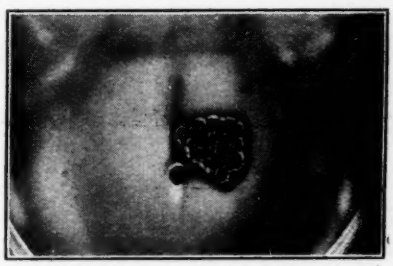
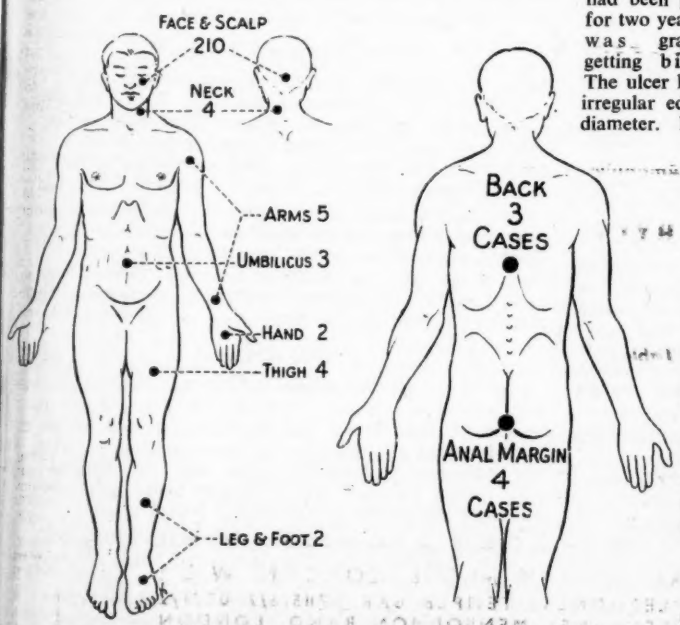


FIG. C.—*Case 1.* Rodent ulcer of the umbilical region. This lesion started as a pimple 12 years previously.

Case 2.—A man aged 60 was first seen in October, 1937, with a small rodent ulcer just below the umbilical margin. It had been present for two years and was gradually getting bigger. The ulcer had an irregular edge and was ½ in. (1.25 cm.) across at its greatest diameter. Excision was undertaken through an elliptical incision. Recovery was rapid and the patient was discharged from the hospital on the fourth post-operative day. Microscopically the growth was a typical basal-cell carcinoma. The patient was well, with no sign of recurrence, two years later.



FIGS. A and B.—Diagrams illustrating distribution of rodent ulcers.

Case 3.—A seaman aged 47 was seen in 1942 with a small raised growth just to the right of the umbilical margin. There was a small ulcerated area in the centre of the tumour. The patient thought he had been stung by a fish while bathing at Alexandria some ten months previously. The growth was hard, with a raised edge. There were no palpable glands in the axilla or the inguinal region. Excision was undertaken through an elliptical incision. Recovery was uneventful. The histological report stated that the lesion was a typical basal-cell carcinoma. This man continued his war service and was discharged in 1946 quite free from any symptoms.

Chest Wall and Back (3 Cases)

Case 4.—A man aged 59 was seen in 1930 with an irregular ulcer the size of a half-crown on the middle of his back on a level with the inferior

angles of the scapulae. The patient had been conscious of a lump on the back for some five years. Excision was undertaken through an elliptical incision. Recovery was uneventful. The histology was that of a typical rodent ulcer.

Case 5.—A man aged 64 was first seen in the out-patient department in November, 1945, complaining of an ulcer on the anterior chest wall about 1½ in. lateral to the right sterno-clavicular joint. Some 19 years previously it had appeared as a spot the size of a pin-head. Gradually it became enlarged, and a crust formed on it. It was never raised above the adjacent skin surface. The ulcer was treated with *x* rays until March, 1947, at fortnightly intervals for courses lasting two to three months each. A total dosage of 4,100 units was given. Apparent cure was obtained twice but was followed by recurrence. On examination an irregular shallow depression was seen 1 in. (2.5 cm.) in diameter. It was almost entirely healed and epithelized, but part of the surface was covered by dry scabs. The surface was flat. The base was not depressed and the margin was not thickened or elevated, but there was an appreciable thickness and a certain stiffness as compared with normal skin. The ulcer was excised in June, 1947. The pathological report stated: "There is a central warty growth with several outlying nodules. It is not ulcerated. The cut surface shows no naked-eye evidence of infiltration of the subcutaneous tissue. Section shows the histological picture of a rodent ulcer. There is no deep infiltration of the underlying tissues" (Plate, Figs. 1 and 2).

Case 6.—A man aged 59 came under observation in December, 1948, with an ulcer on the left side of the chest wall. Thirty years earlier a small red nodule had appeared on the left chest wall level with the skin, and it had gradually enlarged. Ten years ago a scab formed over it, and six years ago it became ulcerated. On examination an ulcer was found on the left chest wall in the mid-axillary line (Fig. D). The size of the ulcer was ¾ by 1 in. (1.9 by 2.5 cm.). The edge was irregular and rolled over in parts. The centre was ulcerated and infected, and the surrounding skin showed some inflammatory erythema. There was no deep fixation. The ulcer was excised in December, 1948. The pathological report was that of a typical rodent ulcer (Plate, Figs. 3 and 4).

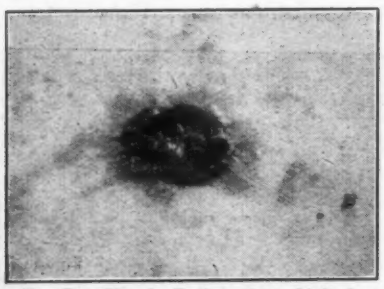


FIG. D.—*Case 6.* Rodent ulcer of left chest wall. This lesion had appeared as a small pimple 30 years before. It had ulcerated only six years before. When seen in out-patient department the ulcer had become secondarily infected.

Anal Margin (4 Cases)

Case 7.—A man aged 62 was seen in February, 1915, with a small irregular ulcer to the left side of the anal margin. It was about ¼ in. (1.25 cm.) in diameter, and had been present for four years. The ulcer edge was hard and "rolled over" in places. There was no enlargement of the inguinal glands. Excision was performed under general anaesthesia, and a small part of the external sphincter ani muscle was removed with the ulcer. Recovery was uneventful, with full sphincteric control. On histological examination the growth was found to be a typical rodent ulcer.

Case 8.—A man aged 64 was seen in December, 1920, with a small ulcer the size of a cherry stone to the right side of the anal margin. The patient had noticed a "pimple" for some years, but he could not be definite about its duration. Excision was performed under local analgesia and recovery was uninterrupted. The histology was that of a rodent ulcer.

Case 9.—A man aged 56 was seen in October, 1922, with a small irregular ulcer the size of a threepenny-piece situated at the posterior part of the anal margin. The patient had noticed the lump for five years. The growth was excised under local analgesia, and recovery was rapid. The histology was that of a typical rodent ulcer.

Case 10.—A man aged 59 was seen in May, 1925, with a small irregular indurated ulcer to the left of the anal margin. It had been first noticed by the patient five years previously and was thought to have started in an external pile. On examination there was an ulcer with a raised edge. It was about 1 cm. in diameter, and in one area it involved the anal margin. Excision was performed under local analgesia, part of the external sphincter ani being removed. Healing was rapid and there was no anal incontinence. Histology revealed a typical rodent ulcer.

Thigh (4 Cases)

Case 11.—A man aged 54 was seen in March, 1916, complaining of an irregular ulcer on the outer side of his right thigh. It was the size of a split pea, and had been first noticed as a pimple two years previously. The ulcer had hard "rolled over" edges and had been irritated by the uniform trousers which the patient wore. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 12.—A marine officer aged 49 was seen in February, 1918, with a small irregular ulcer measuring 1 cm. in diameter situated on the outer part of his right thigh. He thought he had knocked his thigh against a rail a year previously, but was not certain of this fact. The ulcer was excised under local analgesia. The histology was that of a typical rodent ulcer.

Case 13.—A man aged 58 was seen in 1926 with an irregular ulcer on the outer side of his right thigh just below the greater trochanter. It was about 1 in. in diameter and had grown from a small pimple to its present size in eight years. It was excised under general anaesthesia. Histology revealed a typical rodent ulcer.

Case 14.—A male clerk aged 49 was first seen in November, 1948, complaining of a growth on his left thigh. It had started eight years earlier as a small pimple and had increased slowly in size since then. It was not painful. There was a swelling the size of a halfpenny on the anterior surface of the left thigh 4 in. (10 cm.) vertically below the left anterior-superior iliac spine. Its outline was irregular, with raised edges and a slightly depressed centre. Consistency was firm and the edges were well defined. It was attached to skin, but not deeply. It was excised under general anaesthesia in November, 1948. Histological section revealed a typical rodent ulcer with some cystic degeneration (Plate, Figs. 5 and 6).

Legs and Feet (2 Cases)

Case 15.—A stoker aged 62 was seen in 1923 with a small ulcer the size of a split pea on the lower part of the anterior surface of his left leg. A "pimple" had been present for eight years, and he had worn a bandage over it while in the Navy during the 1914–18 war. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 16.—A carpenter aged 59 was seen in 1926 with a small ulcerated area on the dorsum of his left foot. It was the size of a cherry stone and had been present for five years. The edge of the ulcer was irregular and was "rolled over" in parts. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Neck (4 Cases)

Case 17.—A married woman aged 49 was seen in September, 1928, with a small ulcerated area the size of a split pea situated on the left side of the neck just lateral to the hyoid bone. It had started as a pimple eight years previously, when she was serving as a stewardess. The ulcer was irregular, with hard edges. Excision was performed under local analgesia. Histology proved the growth to be a rodent ulcer.

Case 18.—A man aged 59 was seen in December, 1931, with a small ulcer just above the suprasternal notch. It had been present for four years and had started as a pimple. It was about the size of a cherry stone, with irregular edges. The patient had not worn a collar for three years because of the ulcer. Excision was performed under general anaesthesia. Histology revealed a typical rodent ulcer.

Case 19.—A married man aged 62 was seen in May, 1933, with a small ulcer the size of a sixpence just to the right of the ala of the thyroid cartilage. It began as a pimple and had been present for three years. Excision was performed under local analgesia. The growth was a typical rodent ulcer.

Case 20.—A stoker aged 56 was first seen in July, 1936, with an ulcer the size of a large pea in the midline of the neck just above the suprasternal notch. The ulcer had hard raised edges and had been present for over a year. Excision was performed under local analgesia. Histology proved the growth to be a rodent ulcer.

Arms and Hands (7 Cases)

Case 21.—A stoker aged 52 was seen in March, 1919, complaining of an ulcer on the centre of his left forearm. This had first appeared seven years previously while he was working in a tanker. The ulcer almost healed at times, but always broke down again. When examined the ulcer was found to be the size of a threepenny-piece. Its edge was irregular and was firm in consistency. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 22.—An ex-miner aged 62 was seen in April, 1924, complaining of a small ulcer just above his left antecubital fossa. The ulcer had started as a pimple three years previously and had appeared to heal over at times. It was the size of a split pea and its edges were irregular and firm. Excision was performed under local analgesia. Histology proved the tissue to be a rodent ulcer.

Case 23.—A man aged 66 was seen in March, 1928, complaining of a small irregular ulcer on the upper anterior surface of his right upper arm. The ulcer had appeared as a very small lump three years previously. It was now an irregular raised growth ¼-in. (0.6 cm.) in diameter. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 24.—A married woman aged 52 was seen in May, 1930, complaining of an ulcer on the outer side of her left upper arm. The ulcer had started six years previously as a pimple and had gradually increased in size. It appeared to heal on three separate occasions. The ulcer was shallow, with a raised "rolled over" edge, and was the size of a cherry stone. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 25.—A man aged 60 was seen in September, 1932, complaining of a small ulcer just below his right antecubital fossa. It had first appeared four years previously after a blow on the forearm by a hammer. It was irregular, with a hard edge, and was about ¼-in. (0.6 cm.) in diameter. Excision was performed under local analgesia. Histology revealed a typical rodent ulcer.

Case 26.—An electrician aged 69 was seen in December, 1934, complaining of a small ulcer on the back of his left hand. It had started six years previously, after an electrical burn from a live wire. The ulcer was shallow, with an irregular hard outline, and was ½-in. (1.25 cm.) in diameter. Excision and repair of the defect by skin grafting was performed under general anaesthesia. Histology proved the growth to be a rodent ulcer.

Case 27.—A man aged 56 was seen in May, 1940, complaining of a small ulcer on the back of his left hand. The ulcer was the size of a split pea, and it had a hard irregular edge. Excision was performed under local analgesia. Histology showed the structure of a typical rodent ulcer.

Discussion

Basal-cell carcinoma, or rodent ulcer, is a tumour composed of ramifying, often pointed, processes which invade the dermis and subcutaneous tissues; or of lobules composed of cells which have the character either of the basal cells of the epidermis or of the cells lining the pilo-sebaceous ducts. Cells of true sebaceous type do not occur. Sometimes the connexion with the basal layer of the epidermis can be made out in sections; in other cases continuity with the pilo-sebaceous organs is demonstrable. The amount of stroma is variable, but is usually relatively large. It may be fibrous in the chronic types and embryonic in the more malignant tumours (Sequeira *et al.*, 1947).

Epidermal skin carcinomata, whether of basal, squamous, or mixed type, arise intra-epidermally (Savatard, 1931). They are preceded by a hypertrophic change in the affected area of epithelium, which results in the formation of a pre-rodent keratosis, finer and flatter than that of a squamous epithelioma (Molesworth, 1927).

The natural history of rodent ulcers is well illustrated by the above case histories.

In 14 of the 25 cases the lesion first noticed was a "pimple" or small red nodule. Over a period of years, ranging most frequently from four to eight years, the lesion grows slowly; the shortest history in this series was of 10 months, the longest of 30 years. For some years there is no ulceration, but eventually the epithelium over the lesion breaks down. There may be abortive attempts at healing. This occurred in three cases of the series. Finally, however, the patient is seen complaining of a chronic ulcer varying in size from ¼ to 1½ in. (0.6 to 3.75 cm.) in diameter.

The patient is in the sixth and seventh decade of life (the youngest in this series was 47, the oldest was 69). Only two of the 25 patients were female.

The ulcer is irregular in outline, with a heaped-up "rolled over" edge which is indurated and even hard to the touch. The floor may show clean granulations, or may bear sloughs, or may be scabbed over by crusts. There may be evidence of epithelization. There is little or no discharge. If the ulcer has become secondarily infected the base may be necrotic and the surrounding skin may show an inflammatory erythema and induration. Typically there is no fixation deeply. The regional lymph nodes are not enlarged.

Low- and high-power views of a typical rodent ulcer, and of a rodent ulcer showing cystic change, are presented in Figs. 3, 4, 5, and 6.

Clinical Varieties

The clinical appearance of basal-cell carcinoma is not uniform. The most satisfactory classification of the different types is that of Sequeira *et al.* (1947).

Superficial Cicatrizing Type.—(1) The lesion may present as an irregular sclerotic scar surrounded by a rim of small greyish elevations. The surface is smooth, but ulcerates when the lesion becomes more active. (2) A flat infiltration of the skin may be found, underlying an ivory or waxen surface. Ulceration occurs late.

Non-Cicatrizing Type.—This is the typical rodent ulcer. It presents as a chronic, indolent, slowly growing ulcer, which spreads superficially and deeply.

The Terebrant Type.—This lesion may be highly malignant from the start, or may succeed the preceding types. New growth and ulceration progress very rapidly, in depth rather than on the surface, and the tumour is of great local malignancy.

Multiplicity of Lesions

Molesworth (1927) said that multiplicity of lesions in cases of rodent disease was commonplace in Australia. In this country rodent ulcers are often single, though two or three lesions in the same patient are not uncommon.

There is, however, a group of cases in which multiple rodent ulcers are found as described by Sequeira *et al.* (1947) and Johnson (1945). The lesions appear to be identical with those described by Little (1923) under the name "erythematoid benign epitheliomata." These multiple lesions are basal-cell carcinomata of the superficial cicatrizing variety. They occur in the form of a red plaque, at the edge of which is seen a very faint, wax-like, shiny, sinuous margin, narrow and raised; much flatter than the rolled edge of a typical rodent ulcer but clearly of the same

nature (Little, 1923). Histologically a basal-cell carcinoma is seen with unusually shallow invasion of the corium by epithelial down-growths. These multiple superficial lesions are usually numerous, and are diffusely placed over the trunk and limbs. They may be associated with a more characteristic non-cicatrizing rodent ulcer somewhere on the body.

Site

Bland-Sutton wrote: "Although rodent ulcer arises mainly on the face . . . it may occur on the neck and pinna, but never, so far as I know, on the limbs." Molesworth (1927) had not seen rodent ulcer on the hands or forearms; epithelial tumours in these areas he found always to be squamous epitheliomata. Sutton and Sutton (1942) said that the nose, forehead, upper lip, and covered parts of the trunk and extremities were preferred. Sequeira *et al.* (1947) described the site of election as the face above a line drawn just below the lobule of the ears and crossing the face below the nose. The inner and outer canthi, the side of the nose, particularly the alae, and about the ears were the commonest sites; rarely the lips were affected. Basal-cell carcinoma of the trunk were rare.

We have pointed out earlier in this paper that differentiation should be made between the typical non-cicatrizing type of rodent ulcer and the multiple superficial type. The latter is found diffusely distributed over the trunk and limbs. It is much less common to find typical single rodent ulcers in these sites.

Savatard (1923) quotes a case reported by Trimble in which an ulcerated basal-cell carcinoma involved a large area of the anterior abdominal wall. Johnson (1945) appears to have reported especially cases of multiple superficial rodent ulcers; among these there appear to have been one deep ulcer of the chest wall and one of the back. Lawrence (1941) reported two personal cases of basal-cell carcinoma of the anus and four cases found in the literature. Wilson (1941) reported four cases of basal-cell carcinoma of the vulva, and collected 23 additional cases from the literature; he included transitional-cell carcinomata among his cases. Newland (1936), among 600 personal cases of rodent ulcer, found five on the upper extremity and one on the buttock. Little (1923) recorded two cases of single superficial rodent ulcer, one on the buttock, and one on the thigh. Piérard and Dupont (1948) described under the name "nodular epithelioma" what were apparently cystic rodent ulcers—in one case on a leg, in the other on the scrotum.

Treatment

The morphoea-like or "card-like" tumours may be treated satisfactorily with CO_2 snow. Sutton and Sutton (1942) advocate Sherwell's treatment for small lesions: the lesion is curetted, and acid nitrate of mercury is applied. For rodent ulcers in general, however, choice of therapy lies between excision and irradiation.

Factors Which Influence Choice of Therapy

The following points demand consideration.

Site.—Regard must be had to both the accessibility and the proximity of important structures. Almost all rodent ulcers can be excised. With the development of skin grafting and plastic repair of skin defects there is now no site in which a rodent ulcer may be found which is inaccessible to surgical excision. Plastic repair of eyelids or nose can be readily performed. When irradiating rodent ulcers in some areas care must be taken that vital structures are not irradiated at the same time.

Surface Area of Lesion.—All small lesions are naturally the more readily excised. These lesions are also the more suitable for irradiation. Skin defects left by surgical excision can be readily covered by grafts or plastic repair. On occasion the cosmetic effect may be better from irradiation of large areas, but greater exposure to irradiation is necessary, with its attendant disadvantages.

Depth of Penetration of Lesion.—This is difficult always to determine accurately. The more superficial a lesion the more accessible it is to irradiation, either by radium or by *x* rays. But superficial lesions are also readily treated by surgery. Surgery is the treatment of preference where penetration is deep into bone or cartilage.

Multiplicity of Lesions.—In certain cases multiple superficial lesions may be adequately treated with CO_2 snow—namely, those of morphoea or "card-like" type. In some cases superficial irradiation may have practical advantages over multiple excisions. But in the cases with deeper multiple lesions (and there are not usually more than two or three deep rodent ulcers in the same patient) surgical excision is not only practicable but the method of choice.

Age and State of Health of Patient.—Advanced age is not a contraindication to surgery. If the state of health of the patient is poor, local analgesia can almost always be used. Only rarely need a patient be condemned to irradiation on account of poor health. In patients of younger age groups surgical excision finds favour because with their longer expectation of life there is greater likelihood of the development of late complications of irradiation of the skin.

Availability of Apparatus and Trained Staff.—The amenities of surgery and persons trained in their effective use are more generally available than adequate radiotherapeutic apparatus and trained radiotherapists.

Surgical Excision and Irradiation Compared and Contrasted

Surgical excision is applicable to any lesion, and is directed to the area involved and no more. Irradiation becomes technically more difficult the deeper a lesion penetrates and the closer it lies to vital structures. Whereas one operation is required when surgery is practised, and the extent of excision necessary is readily gauged, multiple attendances for irradiation are often necessary, and dosage of irradiation is not standardized. Owing to uncertainty of depth of involvement irradiation may fail to destroy the deeper layers of cells. Some cells of the tumour may be resistant to irradiation. The peripheral extent of the growth may not be appreciated without surgical excision, and an adequate area of tissue may not therefore be irradiated.

The complications of surgical excision of rodent ulcer are negligible. Irradiation produces radiodermatitis, which may be followed by telangiectasis and atrophy; damage to vital structures not involved by the growth may be caused by gamma or *x* rays.

By surgical excision confirmation of diagnosis is obtained. Montgomery (quoted by MacKee and Cipollaro, 1947) showed that 13% of skin carcinomata, diagnosed clinically as basal-cell epitheliomata, contained prickle cells. These mixed or basal-squamous-cell epitheliomata are more radio-resistant than pure basal-cell tumours.

Recurrences occur consistently in 5% of cases treated by *x* rays. There should be no recurrence with adequate surgical excision.

With regard to time lost from work, admission to hospital, and mental trauma, the advantages are with surgery. In almost all cases rodent ulcers may be treated in the out-patient department under local analgesia. Arrangements can readily be made for premedication of the patient to diminish their worry. There is no danger of failure to complete the treatment with surgery as there is with the repeated visits so often necessary with radiotherapy.

Lastly, in the treatment of the recurrences after failure of irradiation, surgery is the only satisfactory choice. Recurrences tend to be more radio-resistant than the primary growth.

Summary

Twenty-seven cases of basal-cell carcinomata (rodent ulcers) are described occurring in sites other than the face and scalp.

The clinical varieties of rodent ulcer, the multiplicity of lesions, and their site are discussed.

Treatment by surgical excision and that by irradiation are compared and contrasted.

Surgical excision of all rodent ulcers is recommended.

We wish to express our thanks to the late Dr. ff. Creed, lately Director of Pathology, King's College Hospital, to Dr. H. A. Lucas, and to Professor H. A. Magnus, Professor of Pathology in King's College Hospital, for their assistance with the histology of these tumours. We wish to acknowledge the assistance of Mr. W. Smith, of the department of photography, King's College Hospital, who prepared the photomicrographs.

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STREPTOMYCIN TREATMENT OF TUBERCULOUS BRONCHOPNEUMONIA IN CHILDHOOD

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[WITH PHOTOGRAVURE PLATE]

This report is concerned with the use of streptomycin for tuberculous bronchopneumonia in childhood, and is based upon the treatment of eight patients admitted between January, 1947, and April, 1948, to the streptomycin centres under the auspices of the Medical Research Council at Alder Hey Children's Hospital, Liverpool (7 cases), and the Royal Hospital for Sick Children, Glasgow (1 case). Two of the patients died, and the six survivors have been followed up for periods of between 6 and 22 months subsequent to admission.

Diagnosis

Tuberculous bronchopneumonia simulates other types of bronchopneumonia closely, the main clinical differences being the insidious onset, steady progress of symptoms, increasing pallor, flabbiness, and weakness, and the progressive character of the abnormal pulmonary signs in tuberculous bronchopneumonia (Naish, 1933). The evidence upon which the diagnosis was based in our cases was as follows.

History of Contact.—The tuberculosis officer of the local authority co-operated with us closely during this investigation, and in seven cases a history of contact with a proved case of pulmonary tuberculosis was obtained (Table I).

History of Illness.—A period of ill-health varying from 27 to 90 days before admission to hospital was a feature, and in two cases the illness followed an attack of measles. All the patients had shortness of breath severe enough for the parents to remark upon it; cough of several weeks' duration was present in seven cases, sputum was noted in one case, and loss of weight had been observed in half the cases.

TABLE I.—*Contact History*

Case No.	Contact	Site	X-ray Film	Sputum	Details of Contact
1	Stepfather	Lungs	Active tuberculosis	Positive	Living in same house; has had sanatorium treatment
	Stepfather's sister	Lungs	—	—	Living in same house until death from pulmonary tuberculosis two years ago
2	Mother	Lungs	Quiescent	Negative	Living in same house
	Brother (18 years)	Lungs	Active	Positive	Living in same house and nursing the child for one month before entering sanatorium
3	Grandmother	Lungs	Active	Positive	Living in same house for first 15 months of child's life
4	Father	Lungs	—	—	Living in same house. Died of pulmonary tuberculosis, July, 1948
5	Father	Lungs	—	Positive	Living in same house
6	No known contact				
7	Mother	Lungs Glands in neck	Quiescent	Negative	" "
	Brother (3 years)	Lungs	Active	Negative	" "
	Brother	Lungs	—	—	Lived in same house until death, at age of 15, from pulmonary tuberculosis, 1945
8	Brother (8 years)	Lungs Cervical glands; dactylitis	Active	Positive (Guinea-pig)	Lived in same house, but now in hospital with pulmonary tuberculosis
	Sister (7 years)	Lungs	Quiescent	—	Living in same house
	Mother—refused examination				" "

Clinical Signs.—The most striking signs were pallor (7 cases), variable degrees of dyspnoea (7 cases), cough (7 cases) accompanied by vomiting (2 cases), and poor nutritional state (3 cases). The pulmonary signs were those of bronchitis (4 cases), consolidation (3 cases), and collapse of the left lower lobe (1 case). (See Table II.)

Radiography.—Radiographs of the chest showed patchy shadowing of the lung fields in all patients: in Case 4 it was

TABLE II.—*General Clinical Signs on Admission of Cases to Hospital*

Case No.	Nutrition	Colour	Dyspnoea	Clubbing	Glands in Neck	Cough	Sputum	Chest Signs
1	Poor; very emaciated	Pale; no cyanosis	Slight	Fingers and toes	Small	Moderate	—	Consolidation both bases. Cavitation right upper lobe anteriorly
2	Poor	Pale; slight cyanosis	"	Absent	"	Severe, with vomiting	Yellow	Consolidation left lung anteriorly; bronchitic signs right side
3	Fair	Pale; no cyanosis	Stridor	"	None	Absent	—	Bilateral bronchitic signs
4	Good	Very pale	Slight	"	"	Moderate	Swallowed	Consolidation upper two-thirds left lung
5	Poor	Pale	Marked	"	Enlarged and bilateral	Severe	—	Generalized bronchitic signs
6	Fair	No cyanosis	Slight	"	None	Moderate	—	Generalized bronchitic signs
7	"	Pale	"	"	Small	Severe, with vomiting	—	Bronchitic signs at both bases
8	"	"	Absent	"	Marked enlargement, with discharging sinuses	Slight	Swallowed	Clinical evidence of collapse of left lower lobe; bronchitic signs in other lung fields

associated with massive consolidation of the left lung, in Case 8 with collapse of the left lower lobe, and in Case 2 with partial collapse of the left lung and compensatory emphysema. In Cases 3, 7, and 8 enlarged hilar glands were visible. A fine miliary type of mottling in addition to the coarse patchy shadowing was present in Case 5. (See Table III.)

Isolation of Organism.—*Mycobacterium tuberculosis* was obtained from stomach washings or sputum in all cases, was seen on direct film examination (Cases 1, 2, 5, and 6), and was isolated by culture (Cases 3, 4, and 8) or by guinea-pig inoculation (Cases 4 and 7). The tubercle bacilli were of the human variety in seven cases and bovine in Case 3.

Tuberculin Reaction.—In five cases strong positive reactions to 1 in 10,000 old tuberculin were obtained; in two cases a dilution of 1 in 1,000 was positive; and in one case the test was negative at 1 in 10,000 but was not tested with higher concentrations.

Course of Illness After Admission to Hospital and Before Starting Streptomycin

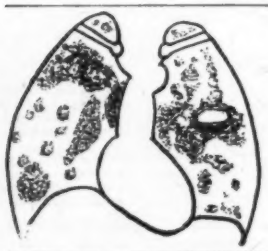
Case 2 received streptomycin from the day of admission to hospital, but the remaining seven cases were observed for periods varying from 17 to 102 days before streptomycin administration was started. An assessment of the clinical condition during this period before streptomycin treatment has been made in Table IV.

Case 3 was admitted for the treatment of suppurative otitis media, and initially no abnormal chest signs were noted. Bronchitis first developed on the 48th day of observation. Fever was minimal except on the 97th day, when a temperature of 104° F. (40° C.) was recorded. No obvious deterioration in general condition was observed. In contrast, the course in Case 1 was progressively downhill: this patient lost 1¼ lb. (570 g.) in 17 days, his temperature reached 102° F. (38.9° C.) daily, and the respiratory signs increased in severity. Similar evidence of increasing consolidation was noted in Case 4 and the temperature was raised to 102° F. daily, but this patient's general condition was fairly satisfactory throughout. In the remaining four cases weight was stationary, appetite was fairly good, temperature was normal except for an occasional rise to 100° F. (37.8° C.), and no alteration in the chest signs was observed.

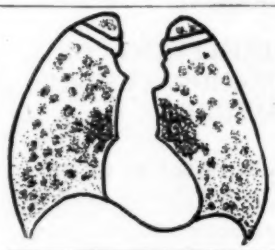
Streptomycin Administration

The streptomycin used was in the form of the hydrochloride, obtained from America (Merck), and the dosage

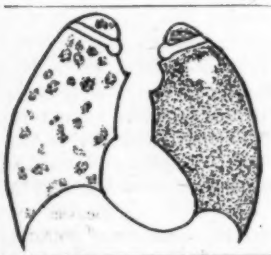
TABLE III.—*Details of X-ray Findings on Admission to Hospital* (Radiologist's Report)



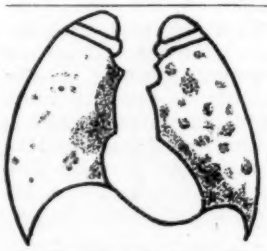
Case 1.—Gross changes in both lung fields typical of tuberculous bronchopneumonia, with cavitation on the left.



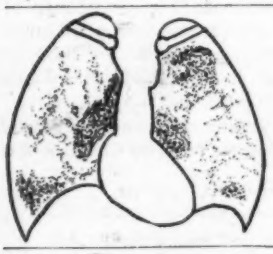
Case 5.—Diffuse bronchopneumonic tuberculous infiltration with finer miliary mottling.



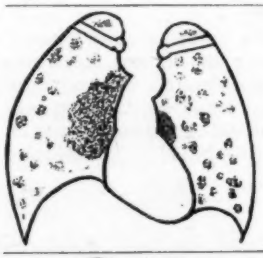
Case 2.—Consolidation and partial collapse of left lung with compensatory emphysema. Bronchopneumonic changes in the right lung.



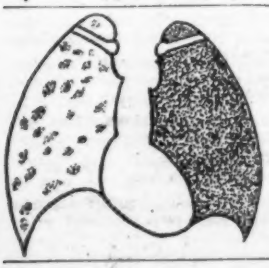
Case 6. — Bronchopneumonic changes in both lungs, but especially the left. Some de-aeration of left lower lobe. ? Tuberculous.



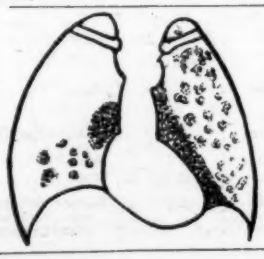
Case 3.—Opacity in left upper lobe and in right lower lobe due to consolidation of bronchopneumonic type; well-marked peripheral hyperaemia in all areas due to bronchopneumonic congestion. Both hilar shadows enlarged.



Case 7. — Bronchopneumonic consolidation of both lungs. Enlarged right mediastinal shadow.



Case 4.—Mediastinum enlarged to the left; areas of consolidation in right lung and massive consolidation of left lung.



Case 8. — Enlarged right hilar gland with infiltration at right base. Collapse of left lower lobe and bronchopneumonic shadowing in left upper lobe.

TABLE IV.—*Clinical Course of Patients from Day of Admission until Start of Streptomycin Therapy*

Case No.	Period of Observation	General Observations	Temperature	Weight	Appetite	Chest Signs
1	17 days	Lethargic and apathetic. Frequent bouts of coughing. Increasing pallor. Progressive loss of flesh	Up to 102° F. (38·9° C.) daily	Loss of 1½ lb. (570 g.)	Good	Evidence of consolidation with cavitation
2	Treatment started on day of admission					
3	102 days	Superficial skin sepsis. Right suppurative otitis media. Measles. Occasional bouts of sweating. Cough and dyspnoea from 48th day; later became cyanosed. Inspiratory stridor noted on 72nd day	Up to 99° F. (37·2° C.) daily, 104° F. (40° C.) on 97th day	—	Poor	Developed bronchitic signs on 48th day
4	21 days	Fair general condition. Loose cough. Dyspnoea. No cyanosis	Up to 102° F. (38·9° C.) daily	—	Poor	Signs of increasing consolidation
5	41 days	Admitted as whooping-cough (17/7/47) but not confirmed. On 1/8/47 developed marked cervical adenitis. (No local cause in throat)	99–100° F. (37·2–37·8° C.)	Stationary	Poor	Bronchitic signs. (Radiograph on 1/6/47 showed primary complex)
6	20 days	Quiet—resents examination. Occasional dry cough. No cyanosis. No dyspnoea	Normal	,,	Good	Bronchitic signs
7	42 days	Pallor. Fair general condition. No dyspnoea. No cyanosis. Fretful	99 to 100° F., with occasional spikes to 101° F. (38·3° C.)	,,	Fairly good	,, ,,
8	48 days	Discharging sinuses in neck and axilla. Bouts of coughing. Dyspnoeic. No cyanosis	Normal	,,	,, ,,	Collapse of left lower lobe

TABLE V

Case No.	STREPTOMYCIN			TUBERCLE BACILLI		Sensitivity *in Vitro* (units/ml.)	Weeks after starting Streptomycin
	Daily Dose and Route	Duration	Total Dose	Source	Date Isolated		
1	0·8 g. i.m. 1·0 g. i.m. 1·0 g. i.m. 0·1 g. i.m.	22/8/47–3/9/47 4/9/47–15/10/47 25/10/47–21/1/48 30/10/47–28/11/47	130 g.	Gastric lavage Sputum ,, ,, ,, ,, ,, ,, ,,	6/8/47 10/8/47 29/1/48 30/1/48 31/1/48 2/4/48 26/4/48 27/4/48	1 ½ 6½ 6½ 6½ 25 50 50	— — 23 23 23 32 35 35
2	0·3 g. i.m. 0·5 g. i.m.	22/1/48–1/4/48 2/4/48–12/4/48	27 g.	Gastric lavage ,, ,, ,, ,,	20/2/48 29/2/48 2/3/48	½ 1 1	4 5½ 6
4	1·0 g. i.m. 0·5 g. i.m. 0·4 g. i.m. 1·0 g. i.m.	21/1/47–24/3/47 26/3/47–21/4/47 27/6/47–25/7/47 23/1/48–20/2/48	112·5 g.	Gastric lavage ,, ,, ,, ,, ,, ,,	17/1/47 22/1/47 14/5/47 27/6/47	0·25 0·25 0·125 0·125	— — 16 22
8	1·0 g. i.m.	2/4/48–26/6/48	84 g.	Sputum ,,	25/2/48 16/7/48	0·125 0·125	— 15

adopted was 0.02 g. per lb. (454 g.) body weight every 24 hours, intramuscularly. The drug was dissolved in distilled water and was given in divided doses six-hourly. This regime was continued for a period ranging between 12 and 22 weeks, making a total dosage of 27 to 130 g. of streptomycin. Three patients showed evidence of mild sensitivity to streptomycin. In Cases 1 and 7 a maculo-papular rash was present on the limbs, face, and trunk. In Case 4 albumin, red cells, white cells, and hyaline casts were present in the urine, and in Case 1 albumin and pus cells were found; these reactions quickly disappeared when the drug was suspended temporarily. Eosinophilia was not a feature, and no effects on the vestibular apparatus were observed. Local soreness, erythema, and induration at the site of injection occurred in one case.

Sensitivity of M. Tuberculosis to Streptomycin

The method of testing was that used in two investigations undertaken by the Medical Research Council (1948) in which the sensitivity was compared with that of the standard culture H37Rv. In half the cases tubercle bacilli were not isolated after treatment with streptomycin had started. In three of the remainder (Cases 2, 4, and 8) the tubercle bacilli showed no increased resistance to the action of streptomycin, but in Case 1 increased resistance was observed. The details of the sensitivity tests are recorded in Table V.

Clinical Course

(a) Fatal Cases (2)

CASE 1

A boy aged 5 years 4 months had a history of measles 26 days before admission, followed by anorexia, loss of weight, apathy, and refusal to play. Unproductive cough continued from the time of the measles. The child's father, suffering from active pulmonary tuberculosis, was living in the same house. On clinical examination, nutrition was poor and loss of weight was obvious. The axillary and inguinal glands were enlarged and clubbing of fingers and toes was present. There was flattening and diminished movement of the right side of the chest, and dullness to percussion at both bases with rales. Cavernous breathing was noted at the right apex anteriorly.

Tubercle bacilli were seen in direct films (and later cultured) from stomach washings. Chest radiographs showed "gross changes in both lung fields typical of bronchopneumonia, with cavitation on the left side." The cerebrospinal fluid showed no abnormality (total protein 30 mg. per 100 ml., sugar normal, cells 2 per c.mm.). Intramuscular streptomycin treatment in a dosage of 0.02 g. per lb. body weight per day (0.8 g.) was started. His condition deteriorated, and 23 days after the beginning of treatment a generalized erythematous rash was observed, albumin appeared in the urine, and treatment was temporarily suspended. One month later tuberculous dactylitis of the left fifth metacarpal bone was noted and his general condition had deteriorated. Two weeks later routine lumbar puncture revealed changes typical of tuberculous meningitis, although there was no suspicion of neck rigidity or other abnormal neurological signs. Total protein, 200 mg. per

100 ml.; globulin, positive; chloride, 670 mg. per 100 ml.; sugar, reduced; leucocytes, 26 per c.mm. (90% mononuclears); tubercle bacilli present.

Intrathecal streptomycin treatment was started with 0.1 g. daily for 29 days. Improvement in the general condition followed and he began to gain weight, but chest signs and *x*-ray findings were little changed. After 19 weeks in hospital streptomycin treatment was discontinued—a total of 130 g. having been given. He had gained 4 lb. (1.81 kg.) in weight during this period. Repeated stomach washings were positive for tubercle bacilli (on culture) and *x*-ray films of the chest showed little change.

His general condition continued to improve, and during the succeeding three months he gained a further 4 lb. in weight. He was then transferred to a convalescent hospital, but three weeks later was readmitted because of loss of weight (3 lb.: 1.36 kg.), severe cough, pyrexia, and occasional vomiting. Chest signs had altered little, sputum was positive for tubercle bacilli, and he had purulent conjunctivitis, blepharitis, and rhinitis, which improved slowly. There were no abnormal signs in his nervous system, and lumbar puncture produced a clear, colourless fluid containing: total protein, 60 mg. per 100 ml.; globulin, positive; sugar, normal; chlorides, 740 mg. per 100 ml.; leucocytes, 10 per c.mm. (80% mononuclears). No tubercle bacilli were found.

His general condition now deteriorated rapidly, chest signs became more pronounced, with increase of cavitation, and *x*-ray films indicated a progressive "adult" type of phthisis of the left lung. Death occurred two months after his readmission. Permission for post-mortem examination was refused.

CASE 2

A girl aged 5 months; said to be healthy until one month before admission, when she contracted a cold and cough, which became severe and spasmodic and was accompanied by vomiting. There was considerable loss of weight, and on admission she weighed 12 lb. 4 oz. (5.46 kg.) (birth weight, 8 lb. 14 oz. (4.02 kg.)). The child's brother had active pulmonary tuberculosis, and had been in close contact with the patient for one month.

On examination the only abnormal signs were in the chest, where movement of the left side was diminished, the percussion note was dull, and crepitations were heard. Radiography of the chest revealed bronchopneumonic shadowing of the right lung, consolidation and partial collapse of the left lung, and an area of compensatory emphysema. Radiologically the lesion was more extensive than was expected in view of the child's general condition.

Tubercle bacilli were isolated in large numbers from gastric washings, and the Mantoux reaction (1 in 10,000) was positive at 48 hours (8 by 12 mm.). Streptomycin, 0.02 g. per lb. body weight per day (0.3 g.), was given intramuscularly in divided doses six-hourly, and was later increased to 0.5 g. daily. Subsequently her general condition deteriorated; anorexia and vomiting began, the liver became progressively larger, and the abnormal chest signs and radiological changes persisted.

Throughout the illness there were no neurological signs or changes in the cerebrospinal fluid. Death occurred twelve weeks after admission, when a total of 27 g. of streptomycin had been given.

Post-mortem Examination.—Wasted infant. Skull and brain normal; no evidence of meningitis. Neck: Large caseous lymph gland in right anterior cervical triangle; several other glands affected to a smaller degree. Lungs: Left upper lobe: extensive caseating confluent tuberculous bronchopneumonia with multiple cavities. Left lower lobe: several caseating foci as well as miliary tubercles. Right lung: multiple tuberculous foci with caseation and miliary tubercles. The mediastinal glands were caseous. Liver grossly enlarged, with miliary tubercles throughout. Spleen slightly enlarged, with widely scattered miliary tubercles. Other viscera normal.

Histology

Lung, Right Lower Lobe.—The material sectioned lay immediately beneath the pleura and included part of a cavity approximately 4 mm. in diameter. The cavity wall consisted of an irregular layer of necrotic consolidated lung surrounded by a zone of spreading bronchopneumonia with an alveolar fibrinous exudate and a predominantly mononuclear cytology. The alveoli showed necrosis of their lining cells and of the exudate contained within them. There was no indication of peripheral fibroblastic activity or of giant-cell formation. Tubercle bacilli were numerous both in the cavity wall and in the surrounding alveolar septa and spaces. Scattered irregularly throughout the remainder of the section were smaller areas of similar nature though without central cavitation; some of these would appear to have arisen by bronchiolar aspiration, while others were probably haematogenous in origin. The intervening lung showed patchy areas of atelectasis and alveolar emphysema. Scanty foci of mononuclear cells, surrounded by a hyaline zone of radiating collagen fibres, with a narrow peripheral layer of concentrically arranged fibroblasts and newly formed capillaries, were also present, representing healing of older haematogenous lesions.

Liver.—This organ showed a moderate degree of fatty infiltration, principally at the periphery of lobules. The parenchymal pattern and the portal tracts were normal. There were numerous foci of necrosis up to 0.5 mm. in diameter, similar to those in the lungs and containing numerous tubercle bacilli; and, especially in places in relation to portal tracts, there were small areas composed of loosely arranged hyaline connective tissue with scanty mononuclear cells, representing healing tubercles. Very scanty lesions of this type, but rather more cellular, showed giant cells.

Spleen.—Large numbers of caseous tubercles, similar to those in the liver, were present. There was no indication of healing.

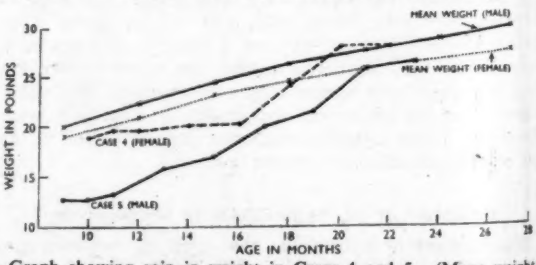
Conclusions.—The microscopical appearances indicate an early miliary dissemination with partial healing, followed at a later date by a massive haematogenous infection. The bronchopneumonic areas in the right lower lobe could be due either to direct aspiration of infected material into this lobe or possibly to intrabronchial rupture of caseous tubercles within the lobe.

(b) Cases (5) Making Good Progress

In these cases progress has been satisfactory as judged by clinical and radiological examination made 16, 15, 10, 8, and 4 months after cessation of streptomycin therapy. This statement is based on the following observations:

General Condition.—On admission the patients were in subnormal health, as evidenced by pallor, dyspnoea, skin sepsis, flabby musculature, apathy, and disinterestedness. After treatment they had a fresh colour, nutrition was good, muscle tone was normal, and they were happy and contented. In the case records appeared such statements as: "Fat, fit, and rosy-looking; very good general condition"; "Happy, smiling, playing normally, very interested in all that is going on"; "Pink colour, happy and contented."

Weight.—All the patients had gained weight (see Table VI), and in Cases 4 and 5, treatment of which began at



Graph showing gain in weight in Cases 4 and 5. (Mean weight curves are taken from Mitchell-Nelson's *Textbook of Pediatrics*, 4th edition.)

10 months and 9 months of age respectively, the gain was striking (see Graph). Case 4 was 1 lb. (453 g.) under mean weight at the beginning of treatment, and 10 months later she was 4½ lb. (2.04 kg.) above the mean weight. Case 5 was 7 lb. (3.175 kg.) below the mean weight when treatment was begun, and 14 months later was only 2 lb. (0.9 kg.)

TABLE VI

Case	Age when Streptomycin was Started	Duration of Illness Before Starting Streptomycin	Streptomycin: Daily Dose (g.)	Streptomycin: Duration, with Date of Initial and Final Injection	Streptomycin: Total Dose (g.)	Weight at Start of Treatment	Change of Weight (Compared with Initial Weight) During and After Treatment: 1 Mth	2 Mths	4 Mths	6 Mths	8 Mths	10 Mths	12 Mths	Oct., 1948	Months After Cessation of Streptomycin to Oct., 1948	X-ray Report, General Remarks, etc., October, 1948
1	5 years 4 mths	28 days	0·8 later 1·0	19 weeks 22/8/47–21/1/48	130	25 lb. 14 oz. (11·74 kg.)	+ 2½ lb. (1·13 kg.)	− 1 lb. 1 oz. (482 g.)	+ 1 lb. 7 oz. (652 g.)	+ 7 lb. 6 oz. (3·34 kg.)	+ 5 lb. 13 oz. (2·64 kg.)	+ 4 lb. 3 oz. (1·9 kg.)		Died 7/6/48		
2	5 mths	28 days	0·3 later 0·5	12 weeks 22/1/48–12/4/48	27	12 lb. 4 oz. (5·46 kg.)	− 4 oz. (113 g.)	− 12 oz. (340 g.)						Died 12/4/48		
3	14 mths	54 days	0·75	18 weeks 14/3/47–19/7/47	63	20 lb. (9·07 kg.)	+ 8 oz. (227 g.)	− 2¼ lb. (1·25 kg.)	+ 1 lb. 5 oz. (595 g.)	+ 2¼ lb. (1·13 kg.)	+ 4¼ lb. (2·15 kg.)	+ 6 lb. (2·72 kg.)	+ 7½ lb. (3·4 kg.)	+ 8 lb. (3·63 kg.)	16	No abnormal signs. Appetite good. Gaining weight. Radiograph shows calcification left hilar region. No evidence of activity of primary focus in right lower lobe
4	10 mths	51 days	1·5 later 0·75 1·0	(1) 18 weeks; 21/1/47–25/7/47 (2) 4 weeks; 23/11/48–20/2/48	84·5 28	19 lb. 2 oz. (8·67 kg.)	+ 10 oz. (284 g.)	+ 11 oz. (312 g.)	+ 1 lb. 1 oz. (482 g.)	+ 1 lb. 7 oz. (652 g.)	+ 5 lb. 5 oz. (2·41 kg.)	+ 9 lb. 5 oz. (4·2 kg.)	+ 9 lb. 3 oz. (4·17 kg.)	+ 13 lb. 4 oz. (6 kg.)	15	Slight broadening of mediastinum, otherwise clear
5	9 mths	90 days	0·5	16 weeks 28/8/47–16/12/47	55	12 lb. 13 oz. (5·81 kg.)	+ 1 oz. (28 g.)	+ 9 oz. (255 g.)	+ 3 lb. 2 oz. (1·41 kg.)	+ 4 lb. 3 oz. (1·93 kg.)	+ 7 lb. 7 oz. (3·37 kg.)	+ 9 lb. (4·08 kg.)	+ 13 lb. 5 oz. (6·04 kg.)	+ 14 lb. 3 oz. (6·4 kg.)	10	No abnormal signs. Good appetite. Gaining weight. Radiograph shows calcification starting in right hilum
6	1 year 9 mths	27 days	0·5	12 weeks 22/10/47–25/2/48	44·5	17 lb. 14 oz. (8·11 kg.)	+ 1 lb. 5 oz. (595 g.)	+ 1 lb. 6 oz. (624 g.)	+ 1 lb. 14 oz. (0·85 kg.)	+ 5 lb. 2 oz. (2·32 kg.)	+ 4 lb. 9 oz. (2·07 kg.)	+ 4 lb. 10 oz. (2·1 kg.)		+ 6 lb. 2 oz. (2·78 kg.)	8	No abnormal signs. Good appetite. Gaining weight. Radiograph: right lower lobe calcification or fibrosis
7	1 year 8 mths	58 days	0·5	12 weeks 12/3/48–4/6/48	42·5	18 lb. 12 oz. (8·5 kg.)	+ 1½ lb. (680 g.)	+ 1½ lb. (680 g.)	+ 2 lb. 14 oz. (1·3 kg.)					+ 5½ lb. (2·38 kg.)	4	No abnormal signs. Good appetite. Gaining weight. Radiograph: some resolution left base and considerable re-aeration right base, but changes still extensive
8	11½ years	48 days	1·0	12 weeks 2/4/48–26/6/48	84	50 lb. 8 oz. (22·9 kg.)	+ 4 lb. (1·8 kg.)	+ 8 oz. (227 g.)	+ 2½ lb. (1·13 kg.)					+ 1½ lb. (680 g.)	4	General condition deteriorating. Radiograph still shows collapse of left lower lobe

below the mean weight, his weight having doubled in this period.

Clinical Signs in Chest.—When treatment with streptomycin was started there was clinical evidence of consolidation of the left lung in Case 4, and bronchitic signs were present in the other four patients. These abnormal chest signs could not be detected after 10 months (Case 4) and after three months in the other patients.

X-ray Examination.—In Cases 3, 5, and 6 (illustrated in Plate) calcification had appeared; in Case 4 there was broadening of the mediastinal shadow, but the radiograph was otherwise clear; and in Case 7, although resolution had occurred in the right lung field, changes were still extensive on the left side.

The clinical record of Case 5 is summarized here as it is representative of the progress of this group of five cases.

CASE 5

Boy aged 9 months. Well until 6 months old, when he developed a cough. Radiography of the chest revealed a primary tuberculous complex. One month later he was admitted to a fever hospital with "whooping-cough"; but this diagnosis was not confirmed, and his condition was ascribed to pressure of tuberculous mediastinal glands. Subsequently the radiological appearances were those of bronchopneumonia, and tubercle bacilli were isolated from gastric washings. The boy had been in close contact with his father, who was suffering from active pulmonary tuberculosis.

On admission the child was extremely ill. There was pallor, cyanosis, dyspnoea, and obvious loss of weight. Weight, 12 lb. 13 oz. (5.8 kg.), or 7 lb. (3.175 kg.) below the expected weight. Temperature, 101° F. (38.3° C.). The cervical glands were much enlarged: moist sounds were present in all lung fields and the tip of the spleen was palpable. No abnormal nervous signs. Radiography of the chest showed "diffuse bronchopneumonic tuberculous infiltration with fine miliary mottling" (Plate, Fig. 4).

His general condition improved within two weeks of starting streptomycin. There was no dyspnoea, the hoarse cry had disappeared, temperature remained below 99° F. (37.2° C.), and feeds were taken well from the bottle. The chest signs had not improved, however, and the neck glands had not diminished in size. During the next two months the improvement was maintained; the child was lively and was playing with his toys. A gain in weight of 9 oz. (255 g.) had occurred, temperature was normal, and the neck glands were slightly smaller. Chest signs had not altered. During this stage weaning had been successfully undertaken.

Four months after treatment had started there was a marked improvement in his general condition; he was happy and contented, appetite was good, his face was visibly fatter, and he had gained 3 lb. (1.36 kg.) above his admission weight. One small gland was palpable on each side of his neck. No abnormal chest signs were detected and an *x*-ray film (Plate, Fig. 5) showed considerable improvement. Subsequent progress, as judged by general condition, clinical signs, and radiological appearances (Plate, Fig. 6), was very satisfactory. His gain in weight (see Graph) may be taken as representative of his general progress.

(c) Case Showing Temporary Improvement

Case 8, girl aged 11½ years. History of cervical adenitis of 12 months' duration with caseation of glands and sinus formation. Three other members of the family were proved cases of active chest tuberculosis.

The child was pale and thin, with no cyanosis and no dyspnoea at rest. Her fundi were normal, there was no neck resistance, Kernig's sign was negative, and abnormal nervous signs were absent. A discharging sinus was present in the right submandibular area, with scars of previous sinuses on both sides of the neck; there was also a discharging sinus in the left axilla. The left lower lobe was collapsed, and crepitations were heard over the whole of the left chest. The tip of the spleen was palpable. Sputum contained tubercle bacilli. A radiograph showed collapse of the left lower lobe

and bronchopneumonic shadowing in the left upper lobe. The cerebrospinal fluid was normal. The Mantoux reaction (1 in 10,000) was positive (12 by 15 mm.).

Streptomycin treatment was started (1 g. daily in divided doses six-hourly), and after six weeks of treatment all the sinuses in neck and axilla had healed. There was a marked improvement in the general condition and appetite was good, but the chest signs were unchanged. After twelve weeks streptomycin was discontinued; the sputum still contained tubercle bacilli.

The patient was sent to a convalescent hospital. Her sputum has remained positive, and *x*-ray films of the chest show little change. Since streptomycin treatment has been discontinued there have been bouts of pyrexia up to 103° F. (39.4° C.) and her general condition has slightly deteriorated.

Discussion

1. The *diagnosis* of tuberculous bronchopneumonia presents difficulties because the clinical signs and radiological appearances may closely resemble those of non-tuberculous bronchopneumonia. In one of our cases, for instance, the radiographs were suggestive of staphylococcal pneumonia, and the correct diagnosis was reached by isolating tubercle bacilli from gastric washings after a prolonged course of sulphathiazole had produced no obvious radiological improvement. Patchy areas of atelectasis associated with bronchopneumonia or with allergic conditions may present similar radiological shadows.

In addition to areas of bronchopneumonia of varying size, the finely mottled appearance of miliary tuberculosis may also be apparent on the *x*-ray film, as in Case 5. The experience of Blacklock (1932) was similar. In his study of 148 tuberculous children who came to necropsy 58 showed mixed miliary and bronchopneumonic lesions. Macroscopically there was often much difficulty in distinguishing between an early bronchopneumonic lesion and a subacute miliary one, and histological examination was frequently essential for differentiation. This same difficulty was found in the radiological assessment and diagnosis of our cases.

Scattered bronchopneumonic areas with cavitation are occasionally observed radiologically in the shadowed area surrounding a primary focus. These areas may progress to extensive pulmonary destruction (Caffey, 1945), and thus may be confused with the cavitation of tuberculous bronchopneumonia—a condition in which dissemination of the infection has occurred to parts of the same lung or the opposite lung through rupture of a caseous lymph node into a bronchus.

2. As to *prognosis*, it is generally considered that recovery is improbable, and the usual course is a progressive deterioration (Nelson, 1946). The seven cases studied at Alder Hey Hospital during these trials were the only examples of tuberculous bronchopneumonia admitted in this period, and they were all treated with streptomycin. The only controls that we can offer, therefore, were similar cases in the hospital during the two years preceding the trials.

(*a*) *Duration of Survival and Mortality Rate.*—During the two years (1945 and 1946) preceding this trial eight proved cases of tuberculous bronchopneumonia were admitted to Alder Hey Hospital. The length of stay in hospital and results of treatment were as follows:

	Sex	Age	Stay in Hospital	Result
T.D.	Male	8 months	4 weeks	Died
J.W.	,,	11 months	9 days	,,
J.N.	,,	1 year 3 months	4 weeks	,,
D.H.	,,	1 year 8 months	7 days	,,
M.M.	Female	1 year 9 months	8 weeks	Taken home against advice
F.R.	Male	1 year 10 months	4 ,,	Died
B.B.	Female	5 years 9 months	2 ,,	,,
M.D.	,,	6 years 5 months	4 ,,	,,

Seven of these eight patients died in hospital after a stay of seven days to four weeks, and the remaining case was taken home in poor general condition after eight weeks.

The results of streptomycin treatment of our patients compare favourably with these figures, both in the duration of life and in the more favourable outcome. The two fatal cases survived for 12 weeks and 9½ months respectively after the beginning of streptomycin therapy. The five cases making good progress have survived 16, 15, 10, 8, and 4 months after cessation of streptomycin therapy.

(*b*) *Change in Weight.*—Gain in weight is considered a reliable guide in assessing improvement in these cases. The details of increase in weight are recorded in Table VI.

(*c*) *Isolation of Tubercle Bacilli.*—Gastric lavage was performed at regular intervals both during and after streptomycin therapy. In the two fatal cases tubercle bacilli were isolated on every occasion. In Case 8, which showed temporary improvement, tubercle bacilli reappeared after two months of streptomycin therapy. In only one of the five cases showing marked clinical improvement were tubercle bacilli isolated from gastric washings after streptomycin therapy had begun; this was Case 4, in which tubercle bacilli were isolated 16 and 22 weeks after the starting of streptomycin therapy.

(*d*) *Radiography.*—Radiographs taken at regular intervals during the trials showed a gradual clearing of the bronchopneumonic areas over a period of months (see Plate). In Cases 3, 5, and 6 calcification appeared 14, 13½, and 12 months after treatment was begun.

(*e*) *Pyrexia.*—The temperature records were of little value in assessing progress of the cases. In Cases 5, 6, 7, and 8 temperature was normal during and after streptomycin administration. In Case 4 the temperature was normal during treatment except on five isolated occasions. In Case 3 temperature was normal during the first eight days of streptomycin therapy, and then figures of 101° F. (38.3° C.) were recorded daily. Clinically otitis media and tonsillitis had developed, and the temperature remained raised until these conditions had subsided. Three days later the temperature again rose to 101° F., and clinically the general condition of the patient had deteriorated and there was an increase in the chest signs. A transfusion of 300 ml. of fresh blood was given; thereafter the temperature remained normal. In Case 1 the temperature at 6 a.m. and 6 p.m. was above 100° F. (37.8° C.) for the first 25 days and often as high as 102° F. (38.9° C.). During the next 80 days it rose to 100° F. on three or four occasions each week; subsequently, normal temperatures were recorded. In Case 2 the temperature was normal except during the first three days of treatment and for the three days preceding death.

3. *Tuberculous meningitis* developed in one of our cases and was diagnosed by routine examination of cerebrospinal fluid before any abnormal neurological signs were present. It is suggested that the cerebrospinal fluid of all cases of tuberculous bronchopneumonia under treatment with streptomycin should be examined at two-weekly intervals during the first two months of treatment and at monthly intervals thereafter to detect early spread of disease to the meninges.

Summary

Streptomycin has been given to eight children suffering from tuberculous bronchopneumonia. Their ages at the beginning of treatment varied from 5 months to 12 years.

Two of these patients have died, and the six survivors have been under observation for periods of from 6 to 22 months.

The diagnosis of tuberculous bronchopneumonia presents difficulties because it closely simulates non-tuberculous bronchopneumonia, patchy collapse of the lung, and confluent miliary tuberculosis.

Gain in weight and radiological improvement in the lung fields are the two most valuable means of assessing progress.

In one child tuberculous meningitis developed during treatment and the organism became resistant to streptomycin.

This investigation was carried out under the auspices of the Medical Research Council Streptomycin in Tuberculosis Trials Committee (chairman, Dr. Geoffrey Marshall) at the centres at Alder Hey Children's Hospital, Liverpool, and the Royal Hospital for Sick Children, Glasgow. These two centres were under the charge of

FIG. 1.—Case 3. Feb. 10, 1947. Bilateral hilar shadows: bronchopneumonic consolidation in left upper and right lower lobes.

FIG. 2.—Case 3. Aug. 1, 1947. Marked improvement in right lower lobe.

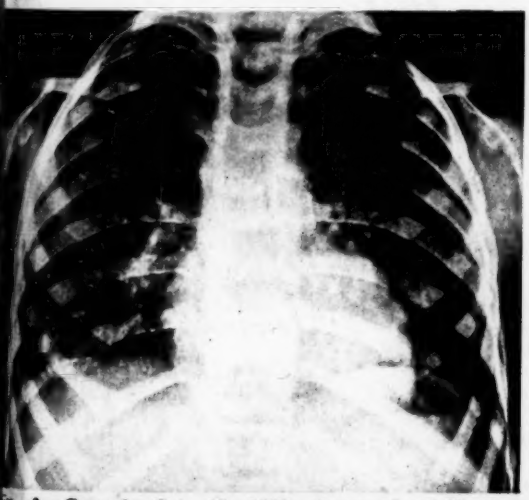


FIG. 3.—Case 3. Oct. 15, 1948. Areas of calcification, especially at right apex, right midzone, and left apex : calcification at right base, probably site of primary focus.

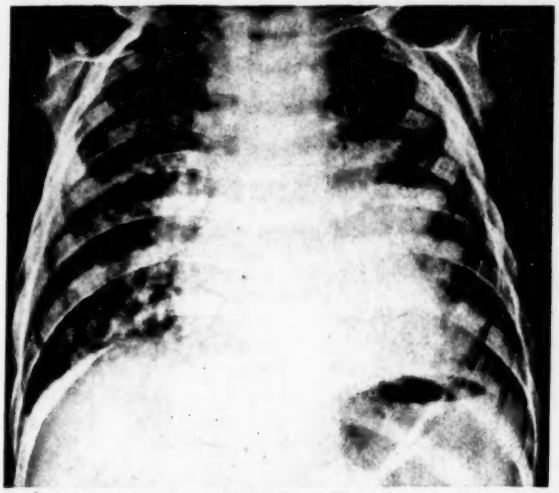


FIG. 4.—Case 5. Aug. 27, 1947. Diffuse bronchopneumonic infiltration.

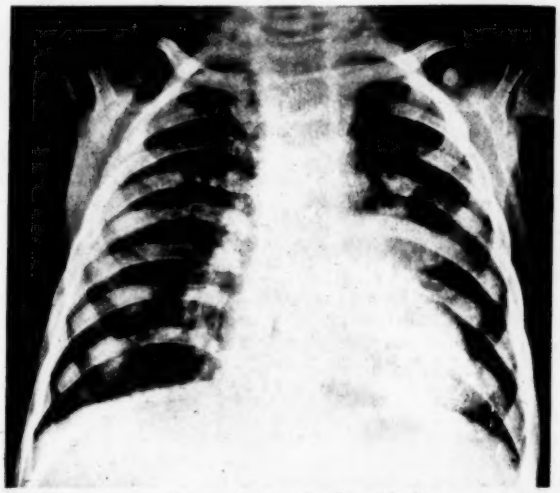


FIG. 5.—Case 5. Jan. 1, 1948. Considerable improvement in periphery of lung fields.

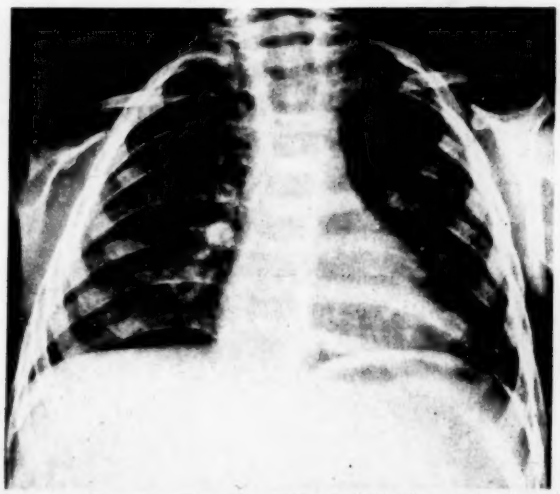


FIG. 6.—Case 5. Oct. 11, 1948. Calcification right base (probably site of primary focus) and right hilar glands.

R. McLAREN TODD : STREPTOMYCIN TREATMENT OF TUBERCULOUS BRONCHOPNEUMONIA IN CHILDHOOD

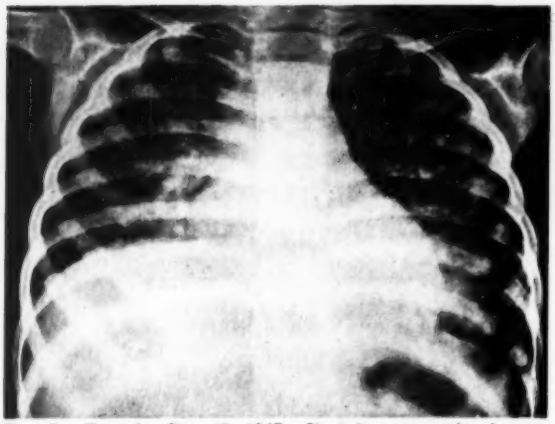


FIG. 7.—Case 6. Oct. 15, 1947. Bronchopneumonic changes in both lungs, more marked on left.

FIG. 8.—Case 6. April 12, 1948. Showing considerable improvement.

SIR CECIL WAKELEY AND PETER CHILDS : RODENT ULCER

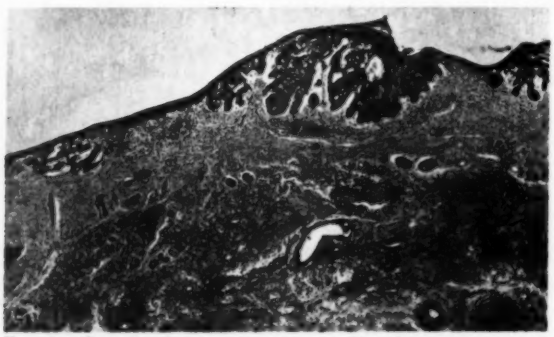


FIG. 1.—Case 5. Low-power view (× 23) of recurrent superficial rodent ulcer found on anterior chest wall, showing multicentric origin of recurrence.

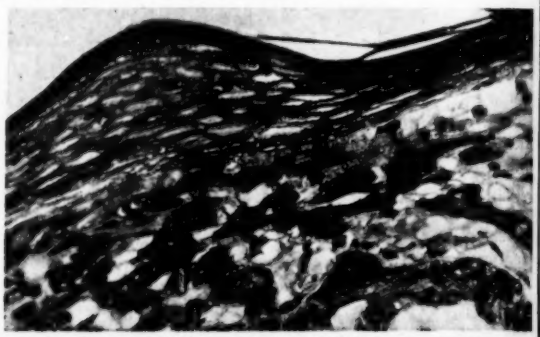


FIG. 2.—Case 5. High-power view (× 260) of section shown in Fig. 1.

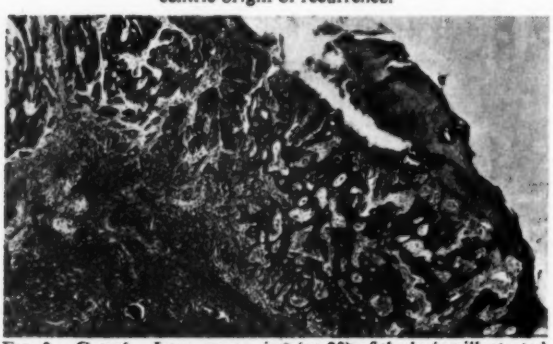


FIG. 3.—Case 6. Low-power view (× 23) of the lesion illustrated in FIG. D (in text). Typical rodent ulcer showing superficial ulceration, and deep penetration of corium on left.

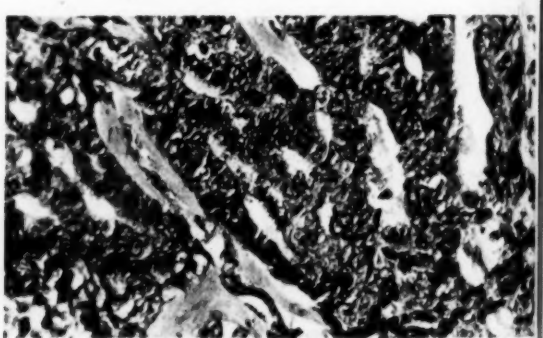


FIG. 4.—Case 6. High-power view (× 260) of the lesion illustrated in Fig. 3.

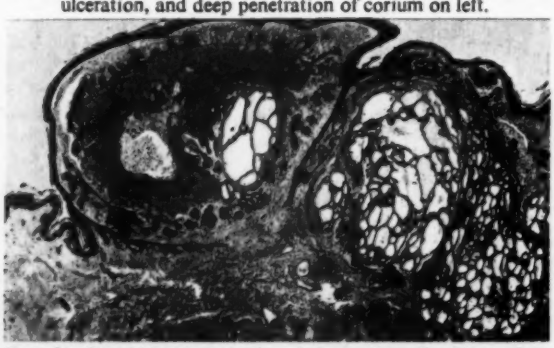


FIG. 5.—Case 14. Low-power view (× 23) of rodent ulcer showing cystic degeneration.

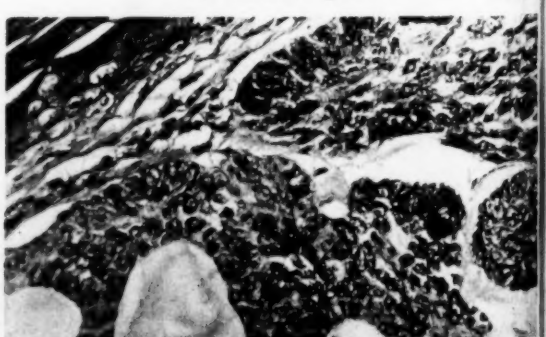


FIG. 6.—Case 14. High-power view (× 260) of rodent ulcer shown in Fig. 5.

Illustrations printed in Collogravure by HARRISON & SONS, LTD., Printers to His Majesty The King, London, Hayes (Middx.) and High Wycombe.

Professor Norman B. Capon and Professor Stanley Graham respectively.

I wish to express my gratitude to all who have been associated with this work, especially the medical staffs of these hospitals.

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SOME PRACTICAL PROBLEMS OF TUBERCULOSIS IN CHILDHOOD*

BY

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It is strange to learn that while Aristotle realized that tuberculosis was an infectious disease Laennec believed it was not contagious, and Koch held that bovine tuberculosis could not be communicated to man. Now it is generally accepted that the majority of infants and children, particularly those living in urban civilized communities, are infected early and develop a high degree of immunity; otherwise few would survive under the housing conditions we have inherited from the industrial revolution of the nineteenth century. It has been long recognized that good ventilation, general cleanliness, and the proper disposal of sputum diminish the risk of repeated massive doses of infection and reduce the incidence of primary infection and reinfection. A health commission sitting in Florence in 1754 reported that "phthisical patients who lived in large airy rooms did not require more than that their rooms should be well cleaned and always purified by widely opened windows; but that stuffy rooms with still air increased the danger to others" (Burrell, 1933).

Susceptibility of Infants

The infant and child are more susceptible than adults, and the younger the patient the greater the risk. Newsholme (1926) says one of the most important problems is how to minimize the risks of infection in the first five years, and especially in the first two years. Kayne (1935) points out that both infection and mortality are greater where the contact is with a parent than with a more distant relative; and with the mother more than with the father. This is obviously explained by the more frequent and intimate association with the mother than with any other member of the household, an exception being the tragic event in which a healthy mother leaves the care of her infant mainly to a "nannie" or nurse who unknowingly is infective. The infant lives strictly within the family, whereas older children share their time at school, out-of-doors, and at home; so that if a parent become infectious he or she may or may not infect the older children, but the toddlers are more likely to be infected, and the infant almost certainly will be.

Infection is known to occur at all ages. My youngest case was diagnosed at 8 weeks (and died three days later), another case at 3 months, and recently one at 7 months. Lemaire (1925) found that if contagion arose before 1 year the mortality was 57%, if between 1 and 2½ years it was 1.66%. Nassau and Zweig (1925) found that of twenty infants infected during the first three months all died; of sixteen infected during the second three months 18.75% died, and of thirteen infected between six and twelve months 3.8% died. Asserson (1927) states that of those infected under 12 months 15% died, and of those between 1 and 2 years 2.6% died. These figures show in general that tuberculosis in young infants carries a heavy mortality, but the chances of survival increase rapidly thereafter.

Mode of Infection

It is now generally accepted that the majority of cases of childhood tuberculosis are the result of human contact. It is certain that almost every case of intrathoracic tuberculosis is of the human type, and all but a few of the cases of abdominal, bone, and joint disease are of bovine origin.

Human Contacts

Infection of infants and children may arise as a consequence of the intimacy of the home environment. In the case of the child diagnosed at 8 weeks the post-mortem examination showed the condition to have been tuberculosis with extensive caseation of the tracheo-bronchial glands. The contact was proved to be the grandmother, who had come into the household to assist her daughter during her confinement by undertaking her household duties and "looking after" the newborn infant. The grandmother was found to have fibroid phthisis with a positive sputum. You will in this connexion remember that Madame Curie (1938) never understood as a child why her mother would never kiss her; she realized afterwards that her mother was consumptive and later appreciated to the full the loving restraint exercised.

Blacklock (1947), in a series of 144 cases of tuberculous meningitis, showed that the source of infection was most often the mother: mother 44%, father 22%, sister 21%, brother 20%, aunt 12%, uncle 6%, grandmother 2%, grandfather 6%, others 11%. What is true of tuberculous meningitis applies to other forms. It is inadequately realized that tuberculous meningitis arises just as effectively from a focus in the chest as from one in the abdomen, and, as there is much more intrathoracic tuberculous infection than abdominal, the majority of cases of tuberculous meningitis are found to be of human origin. McMurray (1944) showed in my series of 24 cases that 72% were human type organisms.

The explanation of the tuberculous mother's complicity is that the infant is exposed by its close contact during nursing, fondling, dressing, etc., to the risk of inhaling a massive dose of bacilli and to repeated infections. Where the mother's position is superseded or supplanted by a grandmother, an aunt, or a domestic who is infectious, the risk is obviously an equal one. In the case of older infants and young children it should be remembered that school-teachers—not forgetting nursery-school and kindergarten teachers—who are the victims of the disease may infect their pupils. The Report of the Children's Committee of the Joint Tuberculosis Council (1948) gives the example of a sputum-positive schoolmaster in whose class two children died of tuberculous meningitis and 45% of the children were found to be tuberculin-positive: in another instance a teacher with positive sputum was probably responsible for two deaths from meningitis. I have a number of records where the domestic servant (and in one case a children's nurse) was entirely unsuspected of having phthisis until tuberculosis was diagnosed in a child in the family and the unsuspected disease discovered.

Indirect infection of children from the inhalation of dust containing dried tuberculous sputum, due to the careless disposal of this highly infectious material, is difficult to prove. But it behoves the infected adult to be considerate of others,

*Address given to the Nottingham Medico-Chirurgical Society on Nov. 17, 1948.

especially the young of the community, and to adopt the highest principles of hygiene in this respect. The tuberculous public must be properly educated in the risk of contagion which they carry and the means by which the risk can be diminished.

Milk-borne Infection

Practically all abdominal tuberculosis is the result of bovine infection due to the ingestion of infected milk. It is possible, though probably rare, for dust contaminated by dried human tubercle bacilli to cause the disease, just as in some instances the inhalation of bovine bacilli from an infected cow can account for pulmonary infection.

A large proportion of cows in this country are tuberculous, probably 40%. Fortunately not all of these excrete tubercle bacilli in their milk, though they give a positive tuberculin reaction. Less than 1% suffer from tuberculosis of the udder, and it is these animals which are almost wholly responsible for unsafe milk. It should be realized that cows suffer from pulmonary tuberculosis; they cough like humans, and disseminate tubercle bacilli in the byre, exposing their bovine colleagues (and byre-workers) to the risk of infection. They (again like humans) swallow their sputum and almost certainly excrete tubercle bacilli in their faeces. In an unhygienic byre, therefore, it is easy to understand how a cow's udder may become contaminated with infected excreta, and through the absence of simple hygienic precautions the milk becomes a menace to those who consume it in a raw state.

This unsatisfactory situation can be overcome by securing a larger and larger proportion of non-tuberculous cows. In the U.S.A. only 0.5% of cows are tuberculous, in Canada 2%, and in New Zealand 4.5%; whereas in Switzerland, the Netherlands, Denmark, Belgium, France, and Britain the figures vary from 20 to 40% (Lord Bledisloe, 1948). In Denmark the incidence is now reported as being less than 10%. Encouragement should therefore be given to the agricultural industry to produce tubercle-free milk, and there is no doubt that this is the best solution from a health point of view as well as for economic reasons.

Effective pasteurization or home sterilization of the milk will render it safe for human consumption. Commercial pasteurization, however, entails elaborate plant which must be subject to frequent inspection and testing for efficiency and thus adds to the basic cost of production. In addition, it puts a premium on dirty milk and will never encourage the widespread production of tubercle-free milk from non-tuberculous cows. The problem of the supply of raw milk which is safe will require the education of milk producers and their conversion to this practice, the provision of adequate incentives, and better conditions for milk-producing cattle than exist on many farms to-day.

It should be widely known that the use of raw milk which does not come from a tubercle-free herd is a grave risk to infants and young children. It is a tragic indictment of present-day conditions to see a child suffering from widespread abdominal tuberculosis as a result of a holiday or a brief visit to a relation in the country, where it has unfortunately consumed infected milk, the parents having always provided safe milk at its home. We should regard tubercle-infected milk as a gross example of food-poisoning, and we as a profession should appeal continuously for the universal provision of milk which is safe, preferably because its source is beyond reproach or, failing this, because it has been effectively pasteurized. Until this has been achieved all other milk should be boiled, just as are eggs and potatoes.

The Tuberculous Lesion

The histology of the tuberculous lesion is characteristic, consisting at first of a focus of large mononuclear cells containing tubercle bacilli which may subsequently proceed to caseation, liquefaction, fibrosis, or calcification.

The primary lesion is the result of an invasion of a tissue or organ by tubercle bacilli, and the illness of the primary pathology is known as the primary tuberculous complex. Parrot (1876) gave the original description of the lung lesion, and Ghon (1912) recorded his observations of detailed search of the lungs in the post-mortem room for the primary focus. Along with Cohnheim and Ranke, Ghon was responsible for controverting Calmette's view that intrathoracic tuberculosis was the result of lymphatic spread from the mesenteric glands. Ghon's primary lung focus is now accepted as the initial pathological lesion of intrathoracic infection. This is followed by a tuberculous lymphangitis spreading from the focus to the lymph glands draining that area, and finally by changes in these glands of an inflammatory and usually caseous nature. This triad of changes is known as the "primary lung complex." It will be appreciated that this is a centripetal spread (characteristic of tuberculosis in childhood), as distinct from the centrifugal spread of the adult lesion. Also the childhood lesion is notoriously difficult to detect by clinical means alone, as it is rarely, even with involvement of the lymph glands, large enough to produce physical signs.

Should the pathological process undergo arrest the only clinical change noted is that after an interval, which may be up to six weeks, the child now reacts to the intradermal injection of diluted tuberculin and becomes Mantoux-positive. The tuberculin test is a fine screen available for the diagnosis of the first infection with tuberculosis in childhood. "It detects the presence of the disease long before other methods of examination are of any avail, and in the majority of cases remains the sole diagnostic agent during life" (Myers and Harrington, 1934).

The primary lesion, having undergone arrest, may be discovered as a result of radiological examination in a number of cases. Its presence should, however, be suspected by the discovery of associated phenomena—an area of pulmonary collapse, or obstructive emphysema due to complete or incomplete blocking of a bronchus; pulmonary collapse may be quite extensive and confounding on clinical examination. Pleurisy, erythema nodosum, and phlyctenular conjunctivitis are other manifestations associated with the primary tuberculous complex. Epituberculosis is sometimes regarded as being associated with the primary lesion. This term was introduced by Eliasberg and Neuland (1920), and is probably "a benign pneumonic consolidation not histologically tuberculous, but conditioned by a state of tuberculin allergy."

Wallgren and Lundblom (1935) estimated that a period of from five to six weeks elapsed between the primary infection and the development of erythema nodosum, from three to six months before pleurisy would arise, up to three months before the onset of tuberculous meningitis, and less than three years before the involvement of bone and joint structures.

Post-primary Tuberculosis

Tuberculosis may eventually involve any structure or organ in the human body. It is estimated that a period of three months is required to ensure healing of the primary focus, and upwards of two years may be necessary for complete arrest of the pathological process in the affected glands. If the process is not arrested in the primary stage the subsequent lesions are regarded as "post-primary." There may be a haematogenous dissemination to other organs resulting in miliary tuberculosis with or without meningitis, caseous tuberculosis of organs such as spleen, liver, kidneys, etc., or the primary complex may disintegrate, giving rise to the "bronchogenic spread."

Symptoms and Diagnosis

The primary infection may be relatively symptomless. It may be indicated by an ephemeral malaise, and be quite excusably regarded as a chill or the result of over-indulgence of appetite or an indiscretion in diet, and receive the routine homely remedy of purgation. Sometimes pyrexia is marked at the onset and may persist at a lower grade for some days, and the child may be subjected to routine investigation which will reveal radiological evidence of a primary lung lesion, or one of the features of the primary complex or associated phenomena, pleurisy or enlarged tracheobronchial glands, and a positive Mantoux reaction. Recently I saw an infant of 7 months suffering from an apparent attack of asthma. The tuberculin test was positive, *x*-ray examination of the chest showed an obstructive collapse of the right upper and middle lobes, and tubercle bacilli were recovered from stomach washings after some weeks. It has since died (vide Barsby, 1941).

It is true, therefore, that the primary lesion and often the immediate succeeding changes are unsuspected. An unexplained temperature should always raise a suspicion, however, and precipitate investigations, which will include skin testing, an *x*-ray examination, and estimation of the sedimentation rate.

It is not my intention to proceed further with either the symptoms or the diagnosis, because consideration of these would involve a review of the symptomatology of the well-recognized manifestations of tuberculosis, prolonged descriptions of which are adequately recounted in standard textbooks.

I would like to emphasize that a negative radiological examination does not in all cases exclude the presence of a primary infection. Myers and Harrington (1934) state that *x*-ray examination fails to locate the lesion of first-infection type in 75% or more of children who react to the tuberculin test; and usually in the 25% in which a lesion is located no clinical significance is attached to it. Likewise when the routine 1 in 1,000 Mantoux is negative the test should be repeated with the stronger dilution if the disease is to be finally excluded. In more than one instance a strongly positive reaction has occurred to the 1 in 100 dilution test done ten or more days after the weaker one, and I sometimes wonder if the first test was not made before the sensitization process was complete.

If a primary lung focus has been discovered the question arises whether or not post-primary extension of the disease is responsible for the illness. I can only emphasize the importance in diagnosis of an adequate history of the illness and a complete physical examination of the patient, with an assessment of the clinical picture in the light of professional experience and mature judgment.

Prevention and Treatment

The prevention of this disease and its eventual eradication depend on many factors, and a successful campaign must therefore be a comprehensive one. It must include the education of parents and those in charge of children in the fundamentals of tuberculosis and its incidence, of doctors in the recognition of the life history and pathology of the disease, and of social workers, students of economics, and the whole agricultural community in the relationship between their various interests and the problem of the prevention of this scourge. Public health services must be stepped up and contacts sought for, nutritional standards maintained or raised, housing improved, and hospital accommodation and facilities provided for the isolation and care of infective patients and contacts, as well as for those who are victims of a primary lesion, so that adequate rest may be attained. B.C.G. vaccination must be considered. Streptomycin is under trial, both for the established case and for the primary infection, and perhaps other remedies are in process of discovery.

Tuberculosis thrives and flourishes on ignorance—ignorance of its cause, of its spread, and of means of its prevention. McNeil (1929) said that "education of the people in the fundamental facts is still needed and ought to keep an important place in medical preventive measures. There is still need not merely for preaching the truth but also for denouncing error. The old heresy that tuberculosis is a hereditary disease, fatally transmitted from parents to children, still lingers in the minds of many and blinds them to the real dangers. It should be possible for all to know and understand the simple essential facts of tuberculous disease in children and of its transmission by milk and man."

If all the milk supplied in this country was safe bovine tuberculosis would disappear, as it has largely done in Canada and U.S.A. The discovery of contacts and their proper care and treatment should be the responsibility of an enlightened public health service, so that these patients could be given the appropriate treatment in the early stages and, for preference, be isolated until they were no longer a menace to those who share their environment. Doctors must exercise constant vigilance and use all the available resources to secure an early and accurate diagnosis—in the child by suspecting the disease in the face of indeterminate signs and symptoms, in the adolescent and adult on evidence of a departure from good health. Mass radiography undoubtedly detects a number of cases which would otherwise be lost; but it is not accepted as an adequate means by which the disease can always be excluded. Reinfection or reactivation must always be borne in mind.

The development of a new infection on a tissue already sensitized provokes a specific reaction which is readily detected by radiological examination. I do not propose to travel far in the field of social economics except to emphasize that good housing and economic security are favourable factors. Crowded living conditions associated with bad ventilation are conducive to the spread of the disease; an inadequate family income usually means sacrifice of the nutritional needs because the "standing charges" of rent, taxes, light, and perhaps heat have all of necessity to be met. There is no useful purpose in settling families in a "garden village" of better homes at an increased rent, additional costs for travelling, etc., unless the family budget can meet these costs without sacrificing the nutritional needs.

B.C.G. Vaccination

B.C.G. vaccination has not been tried in this country as yet. In Canada and on the Continent it is used with enthusiasm in immunizing tuberculin-negative infants and children, particularly those who have to live in tuberculous households. Wallgren has been using B.C.G. in Sweden since 1926, and maintains that vaccinated children are protected against the disease for a period of from two to ten years, during which time they will probably have acquired subclinical tuberculosis and therefore remain relatively immune. Experience in Sweden is impressive; B.C.G. vaccination scars in children are as common as smallpox vaccination scars in this country. One cannot but be attentive to the statement of Malmros (1948): "When a case is admitted to any hospital with the diagnosis of tuberculosis or suspected tuberculosis it is ascertained whether the patient has been vaccinated with B.C.G. By this means it is possible to find out whether any of those vaccinated have developed tuberculosis. During the period 1942–7

only one such case has been discovered." It appears that in this case vaccination has not given enough resistance because of deficient power of reaction. Frappier, of Montreal, hopes in the course of the next few years to have every child in the province of Quebec vaccinated with B.C.G. vaccine.

B.C.G. vaccination has been criticized and subjected to condemnation largely as a result of unfortunate experiences which can be eliminated by the observance of better technique in the preparation of the vaccine and its administration. Complications of the inoculation undoubtedly arise, but they can be avoided by proper precautions. Wilson (1947) has been critical of the suggestion that the practice should be adopted in this country, and has been replied to by Wallgren (1948). It would seem only fair that a scientific investigation of its efficiency in this country should be carried out with proper controls before embarking upon a national venture which by its biological nature will be damned outright by a section of the community.

Streptomycin

Streptomycin seems to have some control over the progress of tuberculosis in that the original experiments on guinea-pigs proved that the drug would arrest and even partially eradicate well-established tuberculosis in that animal. Hinshaw and Feldman (1945) recorded a favourable response in two-thirds of 75 cases, in some a clinical cure being recorded. Apart from a few unpleasant reactions depending upon dosage, impurities in the preparation, and idiosyncrasy, there is the disadvantage (and it is a disquieting one) that some types of tubercle bacilli are resistant to streptomycin. It would appear that these resistant strains, freed from the dominant restraint of the previously active ones, may infect other individuals and multiply in spite of streptomycin administration and account for much of the deterioration of cases under treatment after the initial improvement (M.R.C., 1948). There is the further consideration that a resistant strain can initiate the disease in other individuals and account for the widespread dissemination of the disease in a form for which streptomycin is innocuous.

In miliary tuberculosis a favourable response is obtained in a number of cases, but post-mortem examinations of fatal cases of tuberculous meningitis do not provide any histological evidence that the tuberculoma has been influenced by the drug; the associated meningeal exudate, however, may show considerable organization and thus account for the clinical improvement. There is a suggestion of a field of usefulness for streptomycin in primary infections, but it will be necessary to review the evidence when an extended trial has been made and a critical review is possible.

Conclusion

I have now completed my task within the limits of time and my competence. I shall not have failed, however, if I have focused attention upon some of the practical aspects of a common disease in infants and children, a disease which carries a heavy responsibility for death, sickness, and incapacity. If I began at the beginning it was because, as Aristotle said, "He who sees things from their beginning will have the finest view of them." If we study and understand tuberculosis in all its aspects in the young we will appreciate all the better the disease in the adult; so that nothing is lost, but perhaps much may be gained, by this approach. By concentrated effort in the preventive field and the use of all available facilities for diagnosis and treatment we can look forward with more hope for its eventual eradication.

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THE EFFECT OF ENDOCRINES ON FIBRO-ADENOSIS

BY

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A clinic for the investigation and treatment of the painful nodular breast was established at Guy's Hospital in 1937, and except during the years 1941–5 it has been functioning weekly since that date. At different times I have been assisted in the running of the clinic by various workers, but my thanks are due particularly to Dr. P. M. F. Bishop, endocrinologist to the hospital, who launched the project with me, and whose advice has always been available. All expenses incurred in the investigations have been defrayed by an annual grant from the British Empire Cancer Campaign.

I originally set out to investigate the effect of endocrine preparations on the disease which we now call fibro-adenosis, defined as "a painful or nodular condition of the breast not due to new growth, bacterial inflammation, or fat necrosis" (Atkins, 1938). As this part of the investigation is complete I am submitting a report of the findings. The clinic is at present devoted to a clinico-pathological investigation into the effect of endocrines on established cancer of the breast and to following up the now considerable series of cases of fibro-adenosis.

A report has already been given of the early work in connexion with the administration of oestrogens, and androgens in the form of injections of testosterone propionate (Atkins, 1940), but a brief recapitulation of our findings may not be out of place.

Bearing in mind the importance of the psychological aspect of this condition and the subjective nature of many of the manifestations, together with the absence of any absolute standards of such objective phenomena as "nodularity," we were careful to control our results by submitting a parallel series of cases to a course of injections of sterile olive oil if the subsequent therapeutic agent to be investigated was to be injected, and to a course of chalk pills if the agent was to be taken by mouth.

In nearly every case a random sample of breast tissue was taken by biopsy from that part of the breast where the disease was judged to be most advanced, and submitted to histological examination. A second sample was taken at the conclusion of the treatment and at a corresponding

period in the menstrual cycle. In this way we were able to assess the clinical effect of the substance being investigated and, because the pieces of tissue removed for section were only random samples, to a limited extent the histological changes.

Oestrogens

Thirty-three patients were given oestrogen therapy. They received at least 80 mg. of oestradiol benzoate by injection in four weeks or 280 mg. of stilboestrol by mouth in eight weeks; 19 of these patients had much higher doses.

Our conclusions, based on a clinical follow-up of these 33 cases and set out in detail in the above paper (Atkins, 1940), were that oestrogens were harmful if given in doses large enough to be effective, and that the larger the dose the more harmful was the effect. We formed the impression that histologically the fibroblastic reaction, the epitheliosis, and the adenosis all tended to increase.

Androgens

Thirty-four patients received injections of testosterone propionate; 22 of them had at least 400 mg. in four weeks, and many received considerably higher doses.

It was found that the majority of the patients benefited temporarily by these injections but tended to relapse some weeks after the cessation of treatment. Further, eight of these patients suffered hirsuties, amenorrhoea, and deepening of the voice, and two of the eight had received only small doses of testosterone propionate.

One patient receiving large doses (1,200 mg. in six weeks) developed a carcinoma of the breast at the site of the original fibro-adenosis one year later, the only case at that time to develop carcinoma following fibro-adenosis.

Histologically some of the features of fibro-adenosis seemed less advanced after androgen therapy than before, but of this we were uncertain, and the acid test of sorting the pairs of slides with the labels obscured into "before androgen" specimens and "after androgen" specimens was equivocal. It was concluded, therefore, that the risks entailed in this form of therapy did not justify the temporary relief obtained.

It was at this stage that the war interrupted the investigations. They were resumed in 1946, when it was decided to investigate other methods of androgen administration, using the same techniques of clinical and histological control as those described above. The effects of administering androgens by mouth, by inunction, and by implantation were therefore explored, with the following results.

Twelve patients received 15 mg. of methyl testosterone by mouth daily for two months: seven were relieved of their symptoms for an average of seven months, the longest being eleven months; one was relieved of her symptoms only while the tablets were being taken, the symptoms returning immediately afterwards; three had no relief from their symptoms; and one did not attend the clinic again and cannot be traced.

Nineteen patients received 400 mg. of testosterone propionate in the form of "neo-hombreol" ointment applied to the breast in divided doses daily for a period of one month. Six of these were relieved for an average period of four and a half months after treatment stopped, the longest being nine months; seven said that the pain was relieved while the ointment was being used, but recurred as soon as the treatment stopped; and six said that there was no relief of symptoms.

Eleven patients received 100 mg. of testosterone implanted deep into the breast tissue at the time that the first biopsy was performed. Of these, four were relieved of their symptoms for 1, 2, 3, and 6 months, followed by a relapse; two showed slight improvement for the follow-up period (4 and 5 months); four were not relieved of their symptoms (one extruded the tablet after three months); and one complained that the symptoms were made worse.

The impression gained was that the patients receiving androgen therapy enjoyed a real though slight and only temporary improvement in their symptoms as a result of the androgen absorbed.

None of the cases receiving androgen in the above doses by mouth, by inunction, or by implantation developed symptoms or signs of masculinization, nor in this series was there any constant difference in the histological picture between the original biopsy specimen and the specimen taken after the administration of the androgen. It will be recalled that the histological changes effected by large doses of testosterone propionate by injection were not convincing, and this finding is directly at variance with that of Pricolo and Goisis (1946), who claimed substantial changes in the histological picture as the result of administering androgens in smaller doses than we had been using in our first series.

It must be emphasized that the only crucial test, where random samples of the breast are taken for biopsy, is for an independent histologist to examine the pairs of slides, each of which is given a code number, and to succeed in diagnosing these slides correctly as representing tissue before and after androgen therapy in a significant number of cases. The possibility that androgen therapy modifies the histological picture of the breast is not denied, but the extent to which it does so is far less than the paper cited above would lead one to expect.

Degrees of nodularity are not susceptible to exact measurement, but undoubtedly in a few cases the nodularity was less after androgen therapy. Before claiming these few findings as evidence of the effect of androgen therapy, however, it must be remembered that in a substantial proportion of cases of fibro-adenosis natural remissions occur. Furthermore, the feel of the breast in the majority of our cases receiving androgen therapy did not alter.

Discussion

In a high proportion of cases oestrogen therapy makes the symptoms and signs of fibro-adenosis worse and advances the histological changes characteristic of the disease.

In a substantial proportion of cases androgen therapy causes temporary improvement in the symptoms of fibro-adenosis. The safest, most effective, and most convenient way of administering androgens is in doses of 15 mg. of methyl testosterone by mouth daily for two months. Androgen therapy has less, if any, effect on the nodularity and no constant detectable effect on the histological picture.

My view is, nevertheless, that androgen therapy is not worth while in the disease fibro-adenosis. The pain, divorced from the apprehension, is rarely excessive, and the vast majority of patients, relieved justifiably of their apprehension, forget it. Where the pain is "intolerable" or "agonizing" it is not relieved even temporarily by androgens, and my experience during the early days of the clinic of removing in desperation both breasts in six cases so complaining, after everything else had been tried, has led me to believe that it is doubtful whether the pain is due to fibro-adenosis. Four of these patients still complain of "intolerable" or "agonizing" pain where the breasts were, and the remaining two have transferred their agony to other sites.

It is not justifiable to administer androgen therapy to these patients in the hope that this will prevent the onset of cancer (Loeser, 1938), as the case cited above exemplifies. It is not proposed here to enter into the question of the liability to malignant change in this disease, as this subject,

together with a full discussion of the pathology, significance, and natural history of fibro-adenosis, is to be made the subject of a further report elsewhere. Experience in the clinic has, however, led me to believe that, whatever views are taken about the possible precancerous nature of fibro-adenosis, these patients should be seen by their medical attendant at least every six months. I had thought originally that these continuous visits to the doctor might serve to emphasize and fix the fear of cancer in the patient's mind, but I find in practice that the effect is quite otherwise. Psychologically the patient is able to transfer the whole burden of responsibility to the shoulders of the medical attendant, where it should properly rest, and in the meantime cease worrying, in the knowledge that, in the remote chance of anything sinister developing, it will be dealt with without delay.

If the view is accepted that breast pain is due to the stimulation of nociceptic nerve endings by adjacent fibroblasts, and that these fibroblasts are elaborated in response to epithelial changes in the ducts, as many of the clinical features suggest (Atkins, 1939), then it is easy to see why androgens can have only a limited and temporary effect. Such effect as they do have is presumably the inhibition of oestrogenically stimulated epithelial growth, but without any modification of pre-existing epithelium, hence the absence of histological change. So long as the androgen is being administered inhibition will continue; but at a variable period after it is withheld the natural hormonal balance of the individual is resumed, and oestrogen-stimulated epithelium appears in the ducts with a consequent reactionary fibrosis and recurrence of symptoms.

There is really nothing that we know of at present which permanently modifies these processes apart from pregnancy and lactation, which revolutionize the physiological pattern, and the passage of time. Particularly about the menopause, fibroblasts disappear from the breast (there being no longer any considerable epithelial activity for them to restrain, if we care to think of it in that way) and they fulfil their natural function of being converted into inert collagen fibrils. When this happens the pain ceases. The administration of endocrines in an attempt to modify fibroblastic pain of this sort is not unlike the prescription of penicillin for an inflamed keloid scar—it may affect a little something, but does not get to the root of the trouble and is scarcely worth while.

Like fibroblastic pain in general, the pain of fibro-adenosis, which often varies with the weather, can frequently be relieved temporarily by radiant heat. *X*-ray treatment, on the other hand, is disappointing, and it cannot be denied that the most efficacious treatment is still that of Sir Astley Cooper (1829): a scrupulously careful examination, a confident diagnosis, a justifiable reassurance, and "the return of the patient with delighted affection to her family."

Conclusions

The effect of oestrogens on fibro-adenosis is harmful.

The effect of androgens may be temporarily beneficial, but it is not sufficiently so to encourage the use of these substances therapeutically in this disease.

The histological effect of androgens in therapeutic doses on breasts in cases of fibro-adenosis is inconstant.

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CURARE-MODIFIED ELECTRIC CONVULSION THERAPY IN CASES WITH PHYSICAL DISEASE

BY

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Many mental patients are denied the benefits of electric convulsion therapy (E.C.T.) because of physical contraindications. The purpose of this article is to show that, with few exceptions, even the most severe physical disability should not debar such patients from the use of this method. We here report the results obtained at Shenley Hospital in 50 cases in which the physical condition of the patients rendered them unsuitable for ordinary E.C.T., but in which, nevertheless, this treatment, modified by curare, was used.

Review of Literature

Textbooks contain few detailed instructions regarding contraindications to E.C.T., and wider literature shows a striking diversity of opinion. Thus Herskovitz (1943) is unwilling to treat with E.C.T. patients over 60 or those with any kind of heart disease (past or present) or tuberculosis. Cook (1944) considers tuberculosis an absolute contraindication. On the other hand, Feldman *et al.* (1946) have given E.C.T. to patients over 80, and Kalinowsky and Hoch (1946) do not think it contraindicated when the systolic blood pressure exceeds 200 mm. Hg or in the presence of active tuberculosis. In the main, however, its use in impaired cardiac function, chest disease, old age, and frailty is regarded as requiring careful consideration and as involving considerable risk (Sargant and Slater, 1944). Fractures, except slight vertebral crush fractures, are generally regarded as an absolute contraindication to E.C.T. A number of deaths have been reported where unmodified E.C.T. has been given to patients with heart disease (Jetter, 1944; Napier, 1944) and to elderly patients (Evans, 1943; Mayer-Gross, 1945), and sometimes treatment has had to be discontinued (Jones, 1943). Will and Duval (1947) report a death due to reactivation of old tuberculosis following E.C.T., and mention several other cases in which inactive tuberculosis became active and spread rapidly after treatment. Twenty-nine deaths due to unmodified E.C.T. have been collected by Will, Rehfeldt, and Neumann (1948). This bears out the general conclusion that in such patients unmodified E.C.T. is not without danger.

Respiratory paralysis, which accounts for most of the deaths so far resulting from curare-modified E.C.T., apparently presents no danger if the technique described by Hobson and Prescott (1947), and employed by us, is used. The electrocardiographic evidence that curare should not be used in cases of heart disease (Jones and Pleasants, 1943) is not borne out by clinical experience or by physiological experiment (McIntyre, 1947). Kalinowsky and Hoch (1946) state that patients dislike the sensation of curarization, but we have found that many patients prefer the modified treatment here described to ordinary E.C.T., as the anaesthetic eliminates the unpleasant feelings associated with E.C.T. as well as those associated with curare.

Technique

Our technique is the same as that employed by Hobson and Prescott (1947), except that a greater quantity of curare is used in order to modify the convulsion more effectively. In this way not only is the risk of fracture abolished but

the muscular effort is so slight that there is little or no rise in blood pressure. No cyanosis occurs throughout the treatment. *d*-Tubocurarine chloride is used to modify the convulsion. This is mixed with thiopentone and atropine, and the whole is given by rapid intravenous injection.

Routine investigations before starting treatment include *x*-ray examination of chest and spine, electrocardiograms, and of course physical examination. Treatment is carried out on an ordinary bed with one pillow under the head. Restraint is not necessary.

The initial dose of curare is based upon the body weight: 15 mg. per stone (6.35 kg.) for females, 3 mg. per stone for males. This is varied in subsequent treatments according to the effect on the individual case. We have not so far seen any case unduly sensitive to curare, but one patient (Case 43), weighing 7 st. 5 lb. (46.7 kg.), required 45 mg. of the drug. In the females of our series 0.25 g. of thiopentone and 1/100 gr. (0.65 mg.) of atropine was the standard dose, but in the males an initial dose of 0.15 g. of thiopentone was found to be satisfactory. The doses are altered in subsequent treatments if necessary.

Thiopentone is given to avoid apprehension and the very unpleasant sensation of curarization, also to facilitate artificial respiration. Atropine is employed to maintain a clear airway. Unconsciousness supervenes as curarization begins and is usually prolonged enough to allow full curarization to take place, while artificial respiration is carried out before the electric shock is given.

A Phillips airway is introduced as soon as breathing ceases, and oxygen is insufflated by means of the Lucas resuscitator. This allows a positive and a negative pressure to be given, while the bag automatically fills with oxygen when necessary. An ordinary 5- or 8-litre bag filled with oxygen, fitted to a three-way valve and facepiece and manipulated by the elbow—as in playing the bagpipes—is quite satisfactory, but the Lucas resuscitator is a distinct advantage.

Two to three minutes after the injection the electric stimulus is given and a major fit ensues. In a well-curarized patient there is no movement of the spine or limbs, but there are always some clonic movements of the face, enabling one to see whether or not a major fit is taking place.

Oxygen resuscitation is then continued until respiration restarts spontaneously. The phase of apnoea lasts from two to 45 minutes. The majority of cases, however, are breathing again within 10 minutes. Movement begins first in the diaphragm, spasmodically and ineffectively, but rapidly becomes full and adequate. Prolonged apnoea gives rise to no real difficulty or anxiety, and unless a fall of blood pressure or other complication occurs there is no need for further intervention.

Nikethamide and neostigmine are kept at hand should they be needed, but we have had little use for them. In only two cases of our series—No. 5, in which there was a progressive fall in blood pressure during a period of prolonged apnoea, when nikethamide was given intravenously to initiate spontaneous respiration, and No. 17—were further drugs found necessary.

Ten to 15 minutes after the recovery of respiration, during which time the airway has to be carefully watched and the jaw held, consciousness is regained. The patient then generally feels more comfortable sitting up.

Patients are able to get up and walk one to two hours after treatment. The frequency and number of treatments are the same as in unmodified E.C.T.—i.e., initially twice weekly. This is cut down to once a week after improvement has been secured.

With regard to the additional time taken for the method we have found that one doctor with an experienced nurse can treat six patients in two to two-and-a-half hours. We have not found the complication of laryngeal spasm, mentioned by Hobson, at all common. In fact, we have had only one such case, which was only partial and required no extra treatment.

The accompanying Table shows all the patients who received treatment here between July, 1947, when it was started, and August, 1948. They are arranged in the order in which they first received treatment. The Table gives an idea of the material selected and the results obtained. Physically the results are all favourable. There were no deaths or serious complications, and it will be noted that the number of mental recoveries is higher than is generally claimed for E.C.T. This is due, on the one hand, to the fact that no cases were treated unless the prognosis appeared favourable, and, on the other, to greater certainty of the diagnosis. Many of these patients had been here months or years and had been rejected for straightforward E.C.T. through physical disability. Thus the mental diagnosis had become established with the help of time.

Summary of Cases

1. *Cases of Skeletal Disease.*—Twenty such cases were treated. Ten of these had old fractures of the spine: in three the injury was known to have been due to previous E.C.T. Seven cases had other diseases of the spine—e.g., prolapsed disk, spondylitis ankylopoietica, tuberculosis, and Paget's disease of the spine. The remaining three had recent or malunited fractures of the pelvis or femur.

Sixteen of the twenty have been discharged recovered; three of the remaining four are recovered but have nowhere to go; the other discharged herself before treatment was finished. The average age of this group is 62 years, and their stay in hospital varied from a few weeks in some cases to many months in others. Case 26 had been continuously in hospital for 15 years and has now been discharged. All the cases were *x*-rayed before treatment and some afterwards, but as no movement of the spine took place further radiographs were not thought necessary. No case developed fresh symptoms or signs of the original bony lesion.

2. *Cases of Hypertension and Cardiac Disease.*—Seventeen cases with cardiovascular disease were treated. Twelve of these were hypertensives whose systolic pressure recorded at rest was over 200 mm. Hg; all had electrocardiograms which showed changes varying from uncomplicated left axis deviation to those of frank coronary and myocardial insufficiency. The E.C.G. of Case 45 showed a low voltage and inverted T waves in all leads without any severe left axis deviation, and suggested an old coronary thrombosis. Case 35 had well-marked bundle-branch block. These cases were given larger doses of curare, but the blood pressure did not as a rule rise more than 10 mm. even during the fit—when with full curarization it is possible to take an accurate reading of the blood pressure. In most cases the blood pressure and pulse rate remained unchanged.

Three cases of this group had auricular fibrillation—two secondary to hypertension, the other to a rheumatic heart. The pulse rate was controlled by digitalis, and although it was increased during treatment no case gave cause for anxiety.

The two remaining cases were of congestive failure: one (Case 17) is reported in full; the other (Case 29) was that of an old man of 77 who presumably had myocardial failure.

All patients in this group recovered mentally except two, who are only improved.

3. *Frailty and Senile Cases.*—Eight cases fall into this group. There were no fixed criteria, but five of these patients were under 5½ st. (34.9 kg.) at the start of treatment, and the others were more than 2 st. (12.7 kg.) below normal weight. In addition to this emaciation, half these patients were over 65 years, one was recovering from a gastro-enterostomy, and two had osteoporosis. All improved physically with treatment. Four recovered mentally; three of the others improved but have since relapsed; the remaining case was unchanged.

4. *Pulmonary Cases.*—Four cases of pulmonary tuberculosis were treated. Case 27 is reported in detail. Two were of quiescent pulmonary tuberculosis, both having symptomless fibrotic lesions; the other (Case 48) had chronic apical tuberculosis with cavitation. Case 14 had developed an empyema four months previously which was still present during treatment. No changes occurred clinically or radiologically with treatment. All five cases recovered mentally.

Complications.—Case 28 improved considerably, but treatment had to be stopped owing to repeated local thromboses at the site of injection. Congestive cardiac failure of mild degree occurred during treatment in four cases; but these were in patients with known cardiac disease, and no permanent disability ensued.

Four cases are reported in detail. These represent the four main types of case treated, and those that were most seriously ill are chosen.

Case 3. Depression and Hypertension

A business woman aged 54 became mentally ill in April, 1947, and was admitted as a voluntary patient in June, 1947, with a diagnosis of agitated depression. She was very restless and required much sedation. She had delusions of guilt and was mentally retarded. Her blood pressure on admission was 280/130, and an E.C.G. showed marked left axis deviation with inverted T1. An *x*-ray film of the chest revealed an enlarged heart. Her exercise tolerance was fair. Curare-modified E.C.T. was started on Aug. 8. She was given 23 mg. of curare on each of eleven occasions, and her blood pressure, which varied from 180/110 to 250/120 before the treatments, never rose more than 5 mm. during or after E.C.T. She recovered mentally and was discharged on Nov. 3. Eight months later, while still at home, she apparently relapsed and committed suicide by gassing herself.

Case 18. Depression and Fractured Spine plus Hypertension and Frailty

A housewife aged 64 first became mentally ill at Christmas, 1938, when she had insomnia and a tendency to worry unduly over trivial things. While in a general hospital having the B.M.R. taken she became suicidal and had to be admitted to

Case No.	Age	Sex	Indication	Mental Diagnosis	Result	No. of Treatments	Length of Stay Prior to Treatment	Remarks
1	58	F	Hypertension	Depression	Recovered	7	2 years	E.C.G.: depressed ST segment and inverted T1, T2, T3
2	57	F	Fractured spine	"	"	7	1 month	Fractured spine was the result of E.C.T. three months before
3	53	F	Hypertension	"	"	11	4 months	Committed suicide 11 months after
4	42	F	Pulmonary tuberculosis	Mania	"	7	3 "	
5	71	F	Frailty	Depression	Improved	15	9 "	Subsequently relapsed
6	70	F	Pulmonary tuberculosis	"	Recovered	11	2 "	" "
7	66	M	Spondylitis ankylopoietica	"	"	10	10 "	
8	60	F	Hypertension	"	"	7	2 "	
9	64	F	Frailty	"	"	6	3 "	
10	52	M	Fractured femur	"	"	10	13 "	
11	60	F	Prolapsed disk	"	"	8	3 "	
12	50	F	Frailty	"	Improved	11	1 year	Subsequently had prefrontal leucotomy
13	67	M	Tuberculosis of spine	"	Recovered	5	11 months	
14	33	F	Healing empyema	"	"	6	5 "	
15	49	F	Prolapsed disk	"	"	10	2 "	
16	72	F	Hypertension	"	"	6	6 "	E.C.G.: left axis deviation
17	60	M	Congestive failure (bronchitis and emphysema)	"	"	5	2 "	E.C.G.: low voltage and notched QRS in Lead I
18	65	F	Hypertension and fractured spine	"	"	3	10 years	E.C.G.: marked left axis deviation and multiple extrasystoles. Also emaciated
19	67	F	Frailty	"	Unchanged	14	2 months	Improved physically
20	70	F	Fractured spine (old lung abscess)	"	Recovered	6	1 year	Subsequently relapsed and readmitted
21	71	F	Frailty	"	Improved	8	3 months	E.C.G.: pathologically low voltage in all leads
22	65	M	Hypertension	"	Recovered	8		
23	63	M	"	"	"	10		E.C.G.: many ventricular extrasystoles; marked left axis deviation
24	74	F	Fractured pelvis	"	"	9	3 years	
25	59	F	Fractured spine	"	Improved	4	2 months	Left hospital against advice
26	63	F	Fractured femur and ununited fracture of pelvis	"	Recovered	9	15 years	
27	57	M	Pulmonary tuberculosis	"	"	9		
28	62	M	Hypertension	"	Improved	10		Also myocardial degeneration. E.C.G.: flattened T1 and low voltage in all leads
29	77	M	Cardiac failure (frailty)	"	Recovered	5	8 years	E.C.G.: marked left axis deviation with inverted T1
30	66	F	Hypertension	"	"	11	2 months	E.C.G.: inverted T waves in all three leads
31	64	F	Auricular fibrillation (hypertensive)	"	"	4	4 "	Subsequently had a cerebral embolism (recovering)
32	61	M	Frailty (gastro-enterostomy)	"	"	4		E.C.G.: flattened T1. Nothing else
33	63	M	Auricular fibrillation (mitral stenosis)	"	Improved	5		E.C.G.: auricular fibrillation 5/4/47; normal rhythm 29/4/48
34	59	M	Fractured spine	"	Recovered	8	5 years	Subsequently relapsed
35	71	M	Frailty	"	"	7		E.C.G.: bundle-branch block
36	56	M	Hypertension (old hemiplegia)	"	"	5		E.C.G.: inverted T3. Nothing else
37	40	F	Fractured spine	Mania	"	8	2 months	
38	69	F	Hypertension; emaciated	Depression	"	7	2 "	
39	68	F	Fractured spine	"	"	8	1 month	
40	64	M	Frailty	"	"	10		E.C.G.: left axis deviation
41	61	F	Wedged vertebrae and prolapsed disk	"	"	6	1 "	
42	70	F	Hypertension (spondylolisthesis)	"	"	8	2 months	Also very emaciated and was requiring tube-feeding at the start
43	63	M	Hypertension	"	"	5		
44	68	M	Auricular fibrillation	"	"	5		E.C.G.: auricular fibrillation and low voltage in all leads
45	64	F	Hypertension	"	"	7		E.C.G.: inverted T waves in all leads; myocardial degeneration
46	64	F	Fractured spine	"	"	6		
47	48	F	" "	"	"	6		Fractured spine occurred as a result of an attempt at suicide by a fall
48	54	M	Pulmonary tuberculosis	Mania	"	1		
49	68	M	Paget's disease of the spine with wedging of D5 and L5	Depression	"	6		
50	58	F	Fractured spine	"	"	6	1 year	

a mental hospital. Since that time she has been continuously ill, having on three occasions been admitted to this hospital as a certified patient during her worst phases. On each admission her case was diagnosed as depression. She was apathetic, querulous, suspicious, and deluded. She expressed delusions that she was covered with lice and that her food was being doped by her husband.

Physically she was a poor specimen, weighing 6 st. 8 lb. (41.7 kg.). Her blood pressure was 170/95. An E.C.G. showed inverted T1, upright T2 and T3, marked left axis deviation, and multiple ventricular extrasystoles. A radiograph of the spine revealed an old wedge fracture of D7 with a synostosis of D3, 4, 5, and 6 and marked kyphoscoliosis of dorsal and lumbar regions.

In February, 1948, she had an attack of bronchitis, which brought about congestive cardiac failure with venous congestion in the neck and persistent mild cyanosis. On her recovery from this her mental condition remained the same. Treatment was started on March 16. She was given 20 mg. of curare with 0.25 g. of thiopentone and 1/100 gr. (0.65 mg.) of atropine followed by E.C.T. The convulsion was well modified, but after this her blood pressure rose to 220/130 and the pulse rate to 130 a minute. She developed severe engorgement of neck veins, which persisted for 20 minutes. With the administration of oxygen, however, these signs of cardiac embarrassment subsided.

At the second treatment, which was given three days later, 21 mg. of curare was given, as it was thought that the rise of blood pressure indicated an insufficient curarization. This time the onset of venous congestion was delayed five minutes after the E.C.T. It was then more severe than on the first occasion. The pulse rate became 150 a minute, blood pressure 180/100, and in addition she became very cyanosed in spite of adequate oxygenation of the lungs. Venesection was performed, 100 ml. of blood being removed. Her condition gradually improved, and 75 minutes after treatment she recovered completely. In view of her steady mental progress she was again treated four days later. On this occasion she was given 16 mg. of curare. She began to breathe spontaneously four minutes after treatment, but 10 minutes later her previous symptoms recurred. Venesection (200 ml.) was performed and she rapidly responded.

She recovered mentally, and it was decided not to treat her again unless she relapsed. In fact, in spite of getting a peripheral neuritis and, later, a cystitis, both of which cleared up, she has remained well and was discharged home two months later. A radiograph of the spine showed no change. It has been suggested that these attacks of congestive failure were initiated by attacks of paroxysmal ventricular tachycardia. Added to that, the fact that the heart failure was delayed up to 15 minutes after the injection makes it appear unlikely that the curare itself was responsible.

Case 27. Depression and Pulmonary Tuberculosis

A process engraver aged 57 developed malaise and fever in July, 1947. The fever settled and he went on holiday, where the symptoms recurred. He was admitted to hospital, pulmonary tuberculosis being diagnosed. The sputum contained tubercle bacilli. He was given a left phrenic crush and returned home after three months.

He was admitted to a sanatorium in March, 1948. Radiographs then showed slight apical mottling in the right lung, with extensive infiltration of the upper and middle zones of the left lung. He began to complain of "nerves," and that he was worried and could not sleep. Heavy sedation did not improve him, and as there was thyroid enlargement a therapeutic test of thiouracil was started on May 3. He became more depressed and agitated, and on May 8, after he had inflicted a wound on his left wrist with a razor, he was admitted to this hospital as a voluntary patient.

On admission he was depressed and sleepless, and would not eat his food. He continually worried over imaginary misdeeds and felt that the future was hopeless for him. His pulse remained over 100 and his B.S.R. was 30–65 (Westergren). His temperature remained normal except during an attack of furunculosis in the beginning of May.

Curare-modified E.C.T. was started on May 21. Before each shock he was given 20 mg. of curare, 0.15 g. of thiopentone, and 1/100 gr. of atropine intravenously. His pulse usually rose to 160, but his blood pressure rose no more than 20 mm. The convulsion was limited to clonic movements of the face and to arm rigidity. Oxygen was administered before and after the fit; his colour remained good throughout. He recovered within 30 minutes and gave no cause for anxiety.

He had nine treatments, and by June 21 he was cheerful and co-operative and ate well. He slept well, and showed no trace of his former delusions. He was able to be occupied in bed. His B.S.R. at the end of July was 13–26 (Westergren), his pulse remained between 80 and 100, and he had no pyrexia. He gained 3 lb. (1.36 kg.) in weight, and *x*-ray appearances showed no extension of the area of infiltration. He was discharged on July 21. One month later the *x*-ray appearances were unaltered.

Case 17. Depression and Heart Failure

A postman aged 60 was admitted to a general hospital on Dec. 14, 1947, suffering from heart failure. He had had bronchitis for 20 years. For three years before admission he complained of dyspnoea, and latterly he could not walk more than 100 yards (91.4 m.) without becoming breathless. On admission he was dyspnoeic, his neck veins were full, and rhonchi were heard throughout the chest, which was barrel-shaped and hyper-resonant. On Dec. 15 he got up in the evening and walked home in his dressing-gown and slippers because he "did not wish to wear hospital pyjamas without paying for them." He became suspicious and refused food. He declared that his case was hopeless and that he had caused all the deaths in the ward.

On Jan. 12, 1948, he was transferred to this hospital, under certificate, and was found to be in the state described above. On Feb. 24 modified E.C.T. was started, at which time he weighed 7 st. (44.45 kg.). Before each shock he was given 25 mg. of curare with 0.15 g. of thiopentone and 1/100 gr. of atropine intravenously. Artificial respiration with oxygen was carried out and the shock given three minutes after injection. The convulsion was limited to clonic movements of the facial muscles and slight arm rigidity. There was no cyanosis. Respiration had to be assisted for about 30 minutes after the convulsion. He was then propped up, and he usually recovered completely in one to two hours after the fit. On one occasion he was given 2 ml. of neostigmine and 2 ml. of nikethamide intravenously, as he had not recovered consciousness an hour after the fit. He had five treatments, by which time he became cheerful, was interested in his surroundings, and was eating and sleeping well. His physical condition had improved enough to allow moderate exercise, and he weighed 9 st. (57.15 kg.) when he was discharged on May 9.

Discussion

The cases of this series fall into two main groups: (1) those especially susceptible to bony injury, and (2) those in whom death is a possible outcome of E.C.T. In the former the advantages of diminishing the muscular contractions are obvious. Bennett (1940) and others first used curare in E.C.T. solely with this object. In the latter group the advantages are less obvious and are even open to question.

Hypertensive cases, which form a large part of this group, are given curare because, by diminishing the power of the muscular contractions, the blood pressure is less affected than during a fit unmodified by curare. It has also been shown by experiments on rabbits (Gross and Cullen, 1945) that curare has a direct effect on the smooth muscle of blood vessels and tends therefore to reduce the blood pressure.

In cases with established congestive heart failure the same argument applies—that the strain on the circulation, and particularly the heart, is lessened. Also, by abolishing cyanosis a theoretical advantage, at any rate, is gained.

Will and Duval (1947) have reported the treatment with unmodified E.C.T. of a patient with pulmonary tuberculosis in whom there was a rapid spread of disease. They quote experiments on rats and cattle which show that E.C.T. causes petechial haemorrhages in the lungs and they say these account for the activation of tuberculosis. They also suggest that curare might, by abolishing the violent movements and post-convulsive hyperventilation, provide a greater degree of safety in the shock treatment of the tuberculous patient. The avoidance of cyanosis with our technique is a further logical advantage.

We would like to stress the absolute importance of having available, and being familiar with, a suitable oxygen resuscitation apparatus before this treatment is undertaken.

Summary

The literature concerned with contraindications to E.C.T. and complications arising from it is discussed.

The technique of E.C.T., modified by *d*-tubocurarine chloride and thiopentone with assisted respiration, is described.

Fifty patients, untreatable by ordinary E.C.T., many of whom have been in a mental hospital for a considerable number of years, are reported as having been successfully treated by curare-modified E.C.T.

Four cases are reported in full.

The advantages of curare-modified E.C.T. in the various types of cases reported are discussed.

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ACTING AS AN AID TO THERAPY IN A NEUROSIS CENTRE

BY

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It has been known for many centuries that drama may effectively release emotional tensions in actors and audience or both. Since 1921 Moreno has been attempting to use drama for psychotherapeutic purposes, and in 1942 he founded his Theatre for Psychodrama in New York (Moreno, 1946).

We started to employ group methods in 1942 at Mill Hill Emergency Hospital, and began using plays for therapeutic purposes. At that time we had no knowledge of Moreno's work, but in recent years we have borrowed freely from him.

The Industrial Neurosis Unit at Belmont Hospital has 100 beds (two-thirds male and one-third female), and the patients stay in hospital for an average of two to three months. The organization of the unit has been described elsewhere (Jones, 1947). The patients suffer from various neurotic complaints, mostly of a long-standing character, and the term "industrial" is used to indicate that the case represents a job-placement problem when the time comes to leave hospital. Patients of this type have usually a poor social adjustment, and may be actively antisocial. It has been found that group methods of treatment are particularly useful in treating this type of case. Only the use of drama will be considered here, although, of course, other types of individual and group treatment are used where indicated.

The Rehearsed Play

The plays are written and produced by the patients with the help of the nurses. About one week is spent in preparation and a play is presented weekly. The three wards on the unit take it in turn to produce one. A patient usually volunteers to present his own problem, but he may, if he chooses, remain anonymous, or even write a play which presents some problem other than his own. The patient, having volunteered, is free to choose his own cast, producer, etc.; in other words, all the resources of the unit are put at his disposal so that he may be given every help to re-enact his problem as realistically as possible. No stage, curtains, or elaborate props are used, and the room is just large enough to hold the players and the audience. This is done to obtain an "intimate" atmosphere and avoid any suggestion of amateur theatricals; we want actors and audience to merge, and as many patients as possible to act or discuss or "act out" during the discussion. All the patients in my ward attend, and with the nurses and visitors about 100 people are usually present. Various production devices may be used—e.g., a whispered voice over the microphone to portray thoughts while the player mimes his anguish, etc., or a divided stage where two separate scenes are acted simultaneously, dialogue and mime being used alternately by each group of players.

Following the play, which represents a social or personal problem but never offers a solution, the group is asked by the psychiatrist to help the players to resolve the problem. The psychiatrist plays a largely passive part, content to allow the discussion to flow freely, intervening only if the discussion is becoming irrelevant or is being monopolized by one or two patients, etc. During the discussion it often helps to ask a contributor to demonstrate his point of view by working it out with the actual players. Thus a girl with a partial hemiplegia, the result of a birth injury, wrote a play around her basic problem of social insecurity. She preferred not to act her own part, but during the discussion after the play found it impossible to remain anonymous. She was glad to re-enact several situations with the players, taking over her own role from the patient who had played it previously; such "acting out" allows the audience to "test out" a point of view much more realistically than by mere verbal discussion. At the end of the meeting, which lasts an hour, the psychiatrist tries to sum up and, if possible, to bring the various views expressed into something approaching a point of view acceptable to the group as a whole, or at least to the majority.

Reproduction of a Psychiatric Out-patient Interview

The psychiatrist simply reproduces an out-patient interview and a nurse usually plays the part of the patient. An old case record is used, preferably one where the psychiatrist has done a "follow-up" inquiry. The psychiatrist and nurse run through the interview beforehand. The psychiatrist knows the case well, and it is enough for the nurse to know the general trend of the interview, as she

gets her cues from the doctor; she must try to act the part of the depressed patient or whatever is called for. If necessary, other psychiatric help can be invoked, and the psychiatric social worker, probation officer, disablement rehabilitation officer, etc., can appear in person.

Experience has shown that only simple situational problems should be raised, and there should be no attempt to develop any complicated treatment situation. At the end of the interview, lasting up to thirty minutes, the patients are asked what they would do if they were faced with this particular problem in the role of the psychiatrist. Again the discussion lasts until the end of the hour period, and the psychiatrist sums up, bringing the various points of view together, if possible, into an integrated whole. As before, there is opportunity for the patient taking part in the discussion actually to play the part of the doctor or patient and develop the interview along some particular line to demonstrate points more graphically than can be done by discussion alone.

Spontaneous Acting in a Small "Analytic" Group of about Eight Patients

Group treatment of an "analytic" type has been developed in recent years by many workers, including Schilder (1940), Wender (1940), and Slavson (1947) in the U.S.A., and Bion and Rickman (1943), Foulkes (1946), and Jones (1948) in Britain. Here a group of six to eight patients of both sexes meet for an hour a day for approximately two months. Patients are selected who have some form of social maladjustment, a good intelligence, and not a severe neurosis. The patients come to know something of each other's backgrounds and emotional difficulties. There is a common purposive goal—i.e., that the group should try to understand and help the individual. The atmosphere is essentially permissive, and the group stands for public opinion, which in time comes to be perceived as a much more friendly and understanding abstraction than when the group was first formed. Intimate confidences begin to be expressed and instinctual needs can be consciously formulated. Guilt is found to be much more universal than was at first realized, and is shared by all members of the group with obvious advantage—e.g., guilt over masturbation or hostility towards parents which previously may have been strongly suppressed. In this setting it is comparatively easy to get people to start "acting out" their problems. Thus a bus-driver who had a difficult domestic situation which he could not deal with satisfactorily was helped considerably by the group.

This man, aged 40, had been fairly happy in his home life before going overseas on active service. He was away from home for six years and returned to find the domestic situation completely altered. His wife had ceased to spend all her energies on her household duties: she now enjoyed the company of various women neighbours and was often away from home. Their son, now aged 17, went his own way, paying scant attention to his father or any other member of the family. Their little girl had been a baby when the father left home, and now regarded him as a stranger: the mother had done nothing to keep his memory alive. He returned to find he had no place in the family hierarchy. Added to this, conditions at work had changed; he now had a conductress in whom he had no confidence and who persistently gave the starting signal as some old lady was stepping off the bus, and so on. He felt tense and apprehensive all day when driving, and began to be quite obsessional about his time schedule. By the time he was off duty he felt exhausted and went home only to feel unwanted and frustrated. Finally he developed digestive symptoms suggestive of peptic ulcer, and was sent to hospital.

In the group this patient showed a good understanding of the other patients and a rare sense of humour. A scene was re-enacted when he returned home to his rather unfriendly wife and children and suggested that the whole family spent his day off on Sunday at Kew Gardens. His son met the proposal with frank derision, and the little girl, taking her cue from the mother, showed a striking lack of enthusiasm. It was painful to witness the patient's suppressed anger, and one could almost visualize his red engorged stomach churning furiously. After this scene the group decided that somehow the patient would have to get to know his wife all over again. Various approaches were acted out, the patient often becoming completely inhibited as his hostility got the upper hand: it was much more difficult than just an intellectual understanding, and feelings seemed to crowd out his thoughts. But he made definite progress, which he began to apply when in the real setting of his home. At a follow-up six months after he left hospital he claimed proudly that he had "worked through" his domestic difficulties, and said that the family had had a most enjoyable outing at Kew Gardens.

Discussion

It is difficult to assess the value of any psychotherapeutic method, and in an in-patient unit such as the one at Belmont, where so many other factors—environmental, social, vocational, etc.—are at work, evaluation is particularly difficult. No critical assessment of our acting technique has as yet been attempted, but we are convinced that, taken in conjunction with other individual methods of psychotherapy, dramatic methods can aid treatment.

The rehearsed plays and the reproduction of a psychiatric out-patient interview are carried out in the presence of the entire personnel, patients and staff, of the unit. The patients are given a common social goal, and are asked to try to help with a real life problem concerning a fellow patient. It must be remembered that the industrial unit is largely composed of unemployed disheartened antisocial neurotic people, and one of our chief aims is to try to achieve some degree of resocialization: we believe that the plays bring the patients together and give them a social responsibility which, being shared, amounts to a group aim. The fact is that the patients are a remarkably good audience, and there is a large degree of participation in the discussion afterwards.

This group has definitely changed during the years we have been using a dramatic technique: the attitude now is one of much greater responsibility than formerly towards the person whose problem is being dramatized, and the group participation in the discussion afterwards is correspondingly greater. The other striking change is from anonymity to personal presentation, the latter now being the rule. This suggests the development of a group culture which is accepted by the group as a legitimate medium for the expression of personal problems. The plays usually raise very intimate problems and often invite censure; the fact that great tolerance and understanding are invariably shown must help to restore social confidence not only in the individual directly concerned but in all the patients who have identified themselves with their fellow patient.

The problems presented by the plays are of general interest, and it is easy for the individuals in the audience to project themselves into the situation enacted. In the discussion following the play various points of view are expressed, and the individual has an opportunity of gaining a more objective idea of the problem.

In the small analytic group of eight patients, meeting daily for up to two months, there is a much better opportunity for more specific therapy. We find it comparatively easy to pass from discussion to spontaneous re-enactment of some incident described by a member of the group. In this way it has been found possible to achieve mastery of a situation which in real life had overwhelmed the individual patient. By re-enactment in a friendly environment, in the presence of the psychiatrist, and with the knowledge that it is make-believe anyway, the individual may feel strong enough to cope with the problem enacted.

I doubt if an exact explanation can be given of the emotional relief felt subjectively on some occasions after "acting out," any more than the exact mechanism for the relief of anxiety following a painful abreaction during an analysis can be wholly explained—it is a fact, however, to which all those who have been analysed can testify. Where emotional "catharsis" actually occurs there is usually a sense of relief similar to the everyday experience of getting something off one's chest.

Conclusion

The various dramatic techniques described all aim at giving the individual an opportunity of expressing his thoughts and feelings in direct action or at least of projecting himself into a situation that is being enacted by others. Some of the advantages from these methods include the increase of group consciousness resulting from the patient's participation in a socially valuable group endeavour, an increased objectivity, the opportunity afforded for mastery of neurotic difficulties, and the liberation of pent-up emotions.

Many other techniques involving the same principles could be evolved, and Moreno has shown how valuable the psychodramatic method can be in many social spheres besides that of treating the neurotic—e.g., in the training of social workers by rehearsing home visits, etc. I have simply attempted to describe our use of psychodramatic methods to date, designed to meet our own particular needs in treating an in-patient neurotic population. No attempt is made to claim any specific therapeutic results by these methods. I do feel, however, that they have real value in supplementing short-term individual methods of treatment, and as the experience grows they may make a serious contribution to that most desirable goal—successful treatment of the neurotic in a reasonably short time.

I would like to thank Dr. Louis Minski, physician superintendent at Belmont Hospital, for his friendly co-operation in this work.

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Medical Memoranda

Perforation as the First Manifestation of a Gastric Carcinoma

Perforation of a carcinoma of the stomach is an unusual event. We owe a classical description of the subject to Aird (1934), who collected details of 71 cases and described eight others treated at Edinburgh Royal Infirmary during the preceding ten years. It is significant that of the 71 references listed by Aird only five are from the British literature, and the most recent of these was published in 1904. The series of 506 cases of gastric cancer collected by Payne (1939) from the records of St. Bartholomew's Hospital includes six cases in which suture of a perforated carcinoma was performed, but no clinical details are given.

The diagnosis of the lesion may be considered in two parts: (*a*) diagnosis of the perforation, and (*b*) recognition of the presence of a carcinoma.

Symptoms consequent on the perforation generally follow on classical lines, but some cases pursue a more or less silent course, resembling in this respect perforations of the small bowel occurring in typhoid fever. However, in this event the primary growth or its metastases will already have undermined the patient's health, and it is hardly likely that perforation of an early carcinoma will pass unnoticed. As regards recognition of the carcinoma, in a considerable percentage of cases its presence is already known and the perforation is but an incidental and terminal result of its extension. If the pre-operative findings have not already made the diagnosis certain, a laparotomy is nearly always bound to do so, either by inspection of the lesion or by the observation of metastases, which have been present in approximately half the recorded cases. A small residuum remain in which the history is inconclusive, metastases are not seen, and the perforated ulcer itself lacks the stigma of malignancy. It is the latter group which the following case is designed to illustrate. The case is unusual because the first evidence of gastric disease was provided by the perforation, the carcinoma was not recognized at the operation for its closure, and the patient made for a short time a complete recovery to normal health.

Case Report

A man aged 60 was admitted to the Sheffield Royal Hospital on Nov. 26, 1946. He had been in his usual state of health until the day of admission, and although he had suffered from a mild degree of silicosis, due no doubt to his occupation as a grinder in a Sheffield cutlery works, he denied any past history of indigestion or of other symptoms immediately or remotely connected with his stomach. Ten hours before admission he was prostrated by sudden severe generalized abdominal pain which made him fall to the ground. It doubled him up and made him sweat, and during the course of the day pain was also felt at the tip of the left shoulder. After a few hours it decreased in intensity and he ate a little food, which caused him to vomit.

Examination showed an elderly-looking man lying quietly in bed. He had a good colour and was not sweating. The pulse was 100, regular, and of good volume; respirations 20. Generalized abdominal tenderness and board-like rigidity were present. Peristaltic sounds were heard, but the area of liver dullness was diminished. The clinical history therefore made it evident that a hollow viscus had perforated.

The abdomen was opened two hours after admission—12 hours after the attack began. Dirty free fluid containing fragments of undigested food welled up from the peritoneal cavity. Astride the lesser curve of the stomach, near the pylorus, was an ulcer which had perforated in its centre, the perforation admitting the tip of the little finger. An area of induration about 1 in. (2.5 cm.) in diameter circumscribed the central perforation. The stomach was mobile, with no suggestion of fixity, and the visible extent of the stomach wall at a distance from the lesion had a normal appearance. The liver adjacent to the stomach looked healthy, and in view of the apparently simple nature of the lesion the abdominal cavity was not explored. The perforation was oversewn with three catgut mattress sutures and the abdomen closed.

The post-operative course was uneventful. Gastric suction and intravenous infusion were maintained for 48 hours, and penicillin and sulphadimidine were given until the eighth post-operative day. The patient was discharged on Dec. 10, 14 days after admission.

On Jan. 6, 1947, he was examined in the out-patient department and appeared to be in good health. He complained of occasional epigastric pain after meals, and while it was considered that he might eventually be a candidate for partial gastrectomy the possibility of malignancy had not yet been entertained. A further examination on Feb. 17, however, showed a change for the worse. The pain, though still occurring only after meals, had become severe, vomiting had supervened, and he had evidently lost weight. A barium meal showed "chronic pyloric stenosis associated with a large gastric ulcer. The condition is probably due to adhesions arising from the previous perforation of the gastric ulcer, but the possibility of malignancy cannot be ruled out."

In view of the deterioration in his health, the patient was readmitted to hospital. A laparotomy on March 6, 14 weeks after the first operation, showed a carcinoma of the lesser curve of the stomach, fixed to and infiltrating the liver, and numerous tiny seedling deposits of growth scattered over the anterior wall of the stomach and throughout the peritoneum, omenta, and mesentery. The abdomen was closed and he was discharged to his home two weeks later, where he died on April 10, 1947.

Comment

Whatever one's views may be on the frequency of malignant change occurring in a simple gastric ulcer, there is no doubt in my mind that in this case the ulcer was malignant from the beginning. Considering that the primary lesion was so small when first observed, the rapid course of events after the perforation is remarkable. It is tempting to think that flooding of

the peritoneal cavity consequent on the perforation accounted for the diffuse seedling deposits scattered throughout the cavity. It is more likely that the rapid and silent penetration of the stomach wall, the early onset of fixity, and the widespread appearance of metastases were alike due to a rapidly developing anaplastic growth.

Cases occur from time to time in which the differentiation between an indurated simple ulcer and an ulcerating carcinoma cannot be made with certainty, and in such circumstances Bockus (1943) advises that a small section of tissue should be removed for biopsy. But it is in the very case in which carcinoma is unsuspected that one may be let down, and it would seem more prudent to make biopsy a routine in all gastric perforations treated by operation. Certainly, histological examination may yield equivocal results, but its employment in the case now described might have led to a more fortunate conclusion.

I thank Mr. J. C. Anderson for permission to publish the case treated in his wards, and Dr. J. L. A. Grout for the x-ray findings. Dr. Hart, of Sheffield, kindly informed me of the patient's progress at home.

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Oesophageal Foreign Body in a Baby

The following case illustrates the importance of careful examination in cases of laryngeal obstruction in babies. The only satisfactory method of examining the larynx of a baby is that of direct laryngoscopy.

CASE HISTORY

The patient, a baby aged 1 year, was admitted to hospital on Dec. 9, 1947, with a history of stridor which had been present since Dec. 6, after he had been spoon-fed with hot soup. Soon after admission the baby was seen by Dr. Robert Hughes. His temperature was 102° F. (38.9° C.), pulse 140, respirations 40. The breathing was noisy and stertorous, laryngeal obstruction being obviously present; wet sounds were heard all over the chest.

I examined the baby later on the same evening in the operating theatre. The pharynx was seen to contain a lot of pus and debris when the direct laryngoscope was introduced; the suction tube connected to the steam vacuum apparatus was used to clear the field. There appeared to be no membrane or gross laryngeal oedema, the obstruction being caused by the presence of pus and debris. Suction was employed continually to clear the field, which was being repeatedly obscured by pus welling up from behind the larynx. Eventually the field was cleared, and a foreign body was seen wedged behind the cricoid. After disimpaction this was removed, and an acute erosion of the posterior wall of the oesophagus was observed from which pus was exuding.

The foreign body was a piece of bone, part of the lamina of the tail vertebra of a sheep. The small dorsal process had been responsible for causing the pressure ulceration of the posterior wall of the oesophagus. The piece of bone measured ⅝ in. (1.6 cm.) in length, and its greatest diameter was ½ in. (1.25 cm.). The baby was returned to the ward, and the administration of penicillin, 50,000 units four-hourly, was begun. The temperature fell to 98° F. (36.9° C.) by noon on the following day, and remained normal after this.

On the day after operation it was found impossible to spoon-feed the baby, but he could gulp fluids down from a cup. Debris from the pharynx had to be swabbed away continually. On Dec. 11, two days after the operation, spoon-feeding was attempted, but coughing was again caused, and it was found that drinking from a cup was preferable, as the coughing was not initiated. By Dec. 15 the baby looked perfectly well and took food easily, and thereafter made an uninterrupted recovery.

The history was completely elicited from the mother after the event. On Dec. 6 the child was given a plate of soup in a café, and the bones in the soup were allowed to remain on the spoon while feeding, as the mother was convinced that he would reject any; but the child choked after one spoonful, and was immediately taken to the casualty department of a hospital, where it was stated that there was no bone in the throat. She called her own doctor in to see the child two days later, and, being afraid of further ridicule if she mentioned the bone again, suggested to him that the baby had been scalded by the hot soup.

COMMENT

The interest of this case lies in the diagnosis of the cause of the laryngeal obstruction present. The suggested causes were laryngeal diphtheria, retropharyngeal abscess, and exudative bronchitis. The diagnosis of retropharyngeal abscess was correct, abscess formation having followed the ulceration caused by pressure of the foreign body.

The presence of a foreign body in the oesophagus of the baby of 1 year in the absence of a history was a surprise. From the technical point of view the use of efficient suction enabled the field to be properly cleared, a correct diagnosis to be made, and the efficient removal of the foreign body to be effected.

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Thymoma Simulating Laryngeal Diphtheria

While there are many conditions which by pressure on the trachea or otherwise may simulate laryngeal diphtheria, thymoma is a very rare cause.

CASE REPORT

The patient, a boy aged 4½, was admitted to this hospital on Jan. 8, 1947, with the history of sore throat off and on for nine days, occasional vomiting, and troublesome irritating cough. His mother had noticed a faint pink rash on the trunk, which disappeared in twenty-four hours. On the night of Jan. 7 he developed dyspnoea and was admitted to a general hospital in a state of extreme cyanosis. Tracheotomy was performed, and 40,000 units of antidiphtheria serum were given intramuscularly. His condition improved, and on arrival at this hospital his colour was good, pulse of good volume but rapid, and he was breathing normally through the tube. He was a very well nourished child; physical examination revealed nothing abnormal except a few scattered rales in the chest. A few hours later he developed another attack of dyspnoea and became extremely cyanosed. He was nursed in an oxygen tent, but his condition became steadily worse and he died soon after. Swabs from the nose, throat, and larynx were all negative for Klebs-Loeffler bacilli.

At necropsy a large capsulated pear-shaped tumour of the thymus was found. It extended from the lower poles of the thyroid (not structurally continuous with it) in front of the trachea to the anterior mediastinum. Adjacent structures were not invaded. There were prominent Malpighian corpuscles in the spleen but no general lymphadenopathy. Microscopically the tumour showed the general structure of a lymphosarcoma.

COMMENT

Tumours of the thymus are rare: in 17,000 necropsies Symmers (1911) found 25 thymic tumours—i.e., 0.14%. Diagnosis during life is difficult, as symptoms are few and not pathognomonic. Cyanosis, paroxysmal dyspnoea, and cough are the commonest; there may be pain, dysphagia, or hoarseness due to mediastinal pressure, and sometimes a swelling in the neck is found. Ewing (1928) reports a case with a history of repeated attacks of tonsillitis (cf. histology of tonsils and thymus). In myasthenia gravis, abnormalities of the thymus are found in about 30% of cases, and thymectomy has produced good results. I have not found any reports of cases in which laryngeal diphtheria was simulated.

Treatment is difficult; the scope of surgery is limited, but the sarcomata are radiosensitive and the prognosis is much more favourable than in the case of carcinoma or endothelioma.

I am indebted to Dr. Dawbarn, Walton Hospital, Liverpool, for the report of the post-mortem findings, and to the medical superintendent, City Hospital, Fazakerley, Liverpool, for permission to publish.

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Reviews

PREGNANCY TESTS

Pregnancy Diagnosis Tests: A Review. By Alfred T. Cowie, B.Sc., M.R.C.V.S., Ph.D. Commonwealth Agricultural Bureaux Joint Publication No. 13. (Pp. 283. 15s.)

By the publication of this book the Commonwealth Agricultural Bureaux once more justify the claim of their organization to provide a service of great value to those for whose assistance it was designed. But many more than these will be grateful. The review is well done and well arranged. The author describes every kind of test and considers every kind of animal involved in the test. The magnitude of his task is indicated by the fact that one-third of this book (100 pages) is occupied by a list of the books and scientific papers that he has had to read and critically assess. It is of interest to note in passing that included in this list are two references to "unpublished observations" by the author himself.

Towards the end of the book he presents a summary and conclusions. These are somewhat disappointing, for they would seem to suggest that out of the enormous literature on this subject there is but little firmly proved that is sufficiently trustworthy and immediately applicable in the routine of pregnancy diagnosis. In the main this is due to the fact that in this summary the author omits all reference to pregnancy diagnosis in human medicine. In the veterinary field it seems that only in the case of the mare have these early laboratory diagnostic tests been shown to be of any considerable value.

This is indeed a book that was needed. Since anxiety can be stilled and hope sustained in the human subject, and since the management of his stock by the livestock breeder could be simplified and made more economical, by a confirmation of the existence of pregnancy at the earliest possible moment after conception, it is not surprising that there is a great and ardent demand for these tests. Since the demand for them is so great it is not surprising that biological scientists have everywhere been so busily engaged in refining the older tests and devising new ones. So much work of this kind has been proceeding during the last 25 years that it was high time that someone made a review of this kind and wrote a book like this one. It is the sort of book that everyone hopes that someone else will write, and therefore there will be very many who will be most grateful to the author.

F. A. E. CREW.

PHYSIOTHERAPISTS

The Growth of a Profession. Being the History of the Chartered Society of Physiotherapy, 1894–1945. By Jane H. Wicksteed, O.B.E., F.C.S.P. (Pp. 212. 6s.) London: Edward Arnold and Company. 1948.

In this little book Miss Wicksteed traces the history of the Chartered Society of Physiotherapy from 1894 to 1945. A good deal of the book is taken up by character sketches of the leading personalities, which will interest a limited circle of readers but which will be of great value to future historians. Her descriptions of the conditions in the middle of the last century are illuminating, when "medical rubbing" was a disreputable feature of the social life of that period. Under the influence of Weir Mitchell and of the Swedish School the new Society of Trained Masseuses was conceived at a time when the emancipation of women released a large number of cultivated and intelligent women of the right type looking for a career outside their own homes. An examination paper for obtaining the certificate of the Society is of some interest as an indication of the desire to place the training on a scientific basis: "Describe the circulation of the blood" is quite a broad question for a would-be masseuse of 1895.

From "medical rubbing" the training of the masseuse has had to be expanded to include the use of all the modern paraphernalia of physiotherapy in a relatively short period—the complexities of medical electricity as well as the far more ancient art of hydrotherapy. Perhaps Miss Wicksteed is more concerned with the administrative and medico-political aspects of the relations of the society with the medical profession, however, than with stressing the continued need for a scientific and critical approach to these techniques.

It is satisfactory, as she so rightly points out, that the presidents during the past twenty years have all been outstanding members of the medical profession. It is a pity that she has not been able to discuss the tremendous significance of the National Health Service Act, whether for good or ill, with its effect on the public, or State, demand for physiotherapy to become more widely available. Perhaps in a second edition the situation can be brought up to date. But there is no doubt that all those, whether medical or lay, concerned with the organization of the care of patients requiring physiotherapy at the present time will have a wider appreciation of this important aspect of treatment when they have read the book.

W. S. C. COPEMAN.

DISEASES OF THE EYE

Lehrbuch der Augenheilkunde. Edited by M. Amsler, A. Brückner, A. Franceschetti, H. Goldman, and E. B. Streiff. (Pp. 858; 342 figures. 85 Swiss francs.) Basle: Verlag Von S. Karger.

This volume on diseases of the eye, edited by the occupants of the five chairs of ophthalmology in Switzerland, arose out of the need of a textbook on the subject during the war, when books from abroad were not readily available. Swiss ophthalmology is of high quality, and the fortuitous circumstances which led to the production of this book are an unnecessary excuse for its appearance. The eighteen contributors, with the exception of Professor Weve, are all Swiss. The book is beautifully produced, and even if it broke no new ground it would have been a welcome addition to the literature on ophthalmology.

Most of the subject matter is presented in the way usual to textbooks. A completely modern book would reflect the three formative influences which are remoulding present-day ophthalmology—fuller appreciation of physiological principles, a better understanding of the significance of genetics in ophthalmology, and the imperceptible changes in pathological conceptions consequent on the therapeutic revolution experienced during the past decade. The first two of these influences are strongly reflected in the present text. The chapters on the physiology of the eye by Professor A. Brückner, Dr. R. Brückner, and H. Süllmann, as also the general tone of the account, do full justice to the considerable recent developments in ocular physiology and their bearing on diseases of the eye. The extensive chapter on heredity in relation to the eye by Professor Franceschetti and Dr. Klein likewise reflects satisfactorily the developments in genetics. However, the text is less satisfactory in revealing the changes in our conceptions of pathology. The distinction between infection and inflammation, though recognized, is hardly sufficiently emphasized. There is therefore some confusion on the possibilities of modern therapeutics, and undue prominence is given to methods of treatment that might well be rejected. None the less this book is the best short exposition available of present-day ophthalmology. Unlike many collective works, the text reads smoothly and is devoid of redundancies and overlapping.

ARNOLD SORSBY.

PSYCHOPATHOLOGY

Clinical Studies in Psychopathology. A Contribution to the Aetiology of Neurotic Illness. By Henry V. Dicks, M.A., M.D., F.R.C.P. Second edition. (Pp. 238. 15s.) London: Edward Arnold. 1947.

The second edition of Professor Dicks's book has no major changes and its success will be as assured as that of the first. As the title indicates, it is not a systematic presentation of psychopathology but a collection of case studies illustrating the author's views on some of the chief manifestations of the psychoneuroses. Professor Dicks takes his main inspiration from the work of the psycho-analysts, to whom he makes generous acknowledgment although not belonging officially to their group. Indeed, the brevity of the present work—one of its many attractive features—is chiefly due to the assumption that the reader has a general knowledge of the basic psychopathological theories of Freud and his school. The author's main

contribution consists in a greater emphasis than that given, he thinks, by the psycho-analysts on the conflicts at the early oral phases of development. He suggests that there are three biological needs—a self-preservative tendency, a sexual tendency (Freud's libido), and aggressiveness—and suggests that it is the self-preservative tendency that has to be satisfied by adequate feelings of security in the infant's earliest relations with its mother. When this security is absent the result is anxieties which can have great effects on the future growth of the personality. He also suggests that Freud's libido theory does not do justice to the full instinctual forces that enter into love relationships at all ages, a particularly important omission being the role of tender as distinct from sensual elements.

In the main text the author appears to take psycho-analytic views as much more definite and "official" than they are. Thus the work of Mrs. Klein and other psycho-analysts of the English school on the earliest stages of psychic development has met several of the points raised against Freud's earlier views. (In the preface to this edition, however, the author appears to have recognized this as an omission he would like to make good in any more comprehensive re-writing.) He makes many other interesting theoretical suggestions, and, although primarily for the psychotherapist, the cases are described so clearly that even the tyro in this field cannot fail to get a vivid impression of the psychological forces underlying neurotic illness.

J. D. SUTHERLAND.

REFORM OF MENTAL HOSPITALS

That Which is Caesar's. By H. G. Woodley. (Pp. 158. 8s. 6d.) Oxford: Pen-in-Hand, St. Michael's Street.

No doubt there is a good case for the reform of institutional psychiatry. In a civilized and prosperous country the practice of herding thousands of certified patients in huge compounds can scarcely be justified. With a decentralized system, and the services of five, or preferably ten, thousand suitably trained psychiatrists, it would no doubt be possible to treat the certified population of Great Britain in a way which might satisfy the author of this book. But to judge from his own presentation there appears to be grave doubt whether the case for reform can be stated either temperately or effectively by someone who has spent a year in a mental institution as a certified patient.

Outraged by the circumstances of his certification, and horrified both by the routines of treatment and by what he regards as a glaring lack of individual psychological attention, Mr. Woodley came to the conclusion that the only way to bring all this home to the public was to employ shock tactics, using for this purpose a scriptural variety of journalese which is certain to alienate the fastidious and to arouse suspicion in the minds of professionally trained persons. This is the more regrettable since the author has quite clearly grasped the desirability of maintaining whatever rapport is possible with even advanced or deteriorated cases, an understanding which he has evidently fortified with some reading in clinical psychology. Apparently, however, his reading has been vitiated by a persistent bias in favour of exclusively environmental causes of insanity. He is consequently altogether too optimistic about the accessibility of the psychoses even to the most understanding treatment. In fact the main virtue of the book is that the author attempts, however unsuccessfully, to do what would be much better done by psychiatrists themselves, if only they were so disposed.

EDWARD GLOVER.

Volume 2 of *Advances in Internal Medicine*, edited by Dr. William Dock and Dr. I. Snapper (Interscience Publishers, £2 17s.), contains a series of reviews by first-rate authors on clinical subjects where there have recently been considerable advances. The articles vary from about 5,000 to 20,000 words in length and cover a wide field. The ones of greatest interest to the reviewer, who is not a cardiologist, were "Circulatory Failure Studied by means of Venous Catheterization" (McMichael), "Angiocardiography" (Sussman and Grishman), and "Surgical Treatment of Hypertension" (Grimson). These provide the ordinary consulting physician or clinical lecturer with an admirably clear picture of the present situation. The article on angiocardiography is illustrated by remarkably fine *x*-ray photographs. Anyone looking for up-to-date accounts of disease and its treatment will now have to keep an eye on *Advances in Internal Medicine*.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

An Atlas of Traumatic Surgery. By Joseph Trueta, M.D., D.Sc., F.R.C.S.Can. (Pp. 150. 30s.) Oxford: Blackwell Scientific Publications. 1949.

A short, fully illustrated volume.

A Textbook of Pathology, General and Special. By J. M. Beattie, M.A., M.D., D.Sc., and W. E. C. Dickson, M.D., B.Sc., F.R.C.P.Ed. Vols. 1 and 2. 5th ed. (Pp. 1,582. 168s.) London: William Heinemann. 1948.

Revised and enlarged.

The Thyroid and its Diseases. By J. H. Means, M.D. 2nd ed. (Pp. 571. 72s.) London: J. B. Lippincott. 1948.

From the Thyroid Clinic of the Massachusetts General Hospital.

Ways to Better Hearing. By L. Brentano. (Pp. 212. 10s. 6d.) London: George Allen and Unwin. 1948.

For the deaf.

Management of Common Gastro-Intestinal Diseases. Edited by T. A. Johnson. (Pp. 280. 42s.) London: Lippincott. 1948.

From the American Practitioner series.

Taylor's Principles and Practice of Medical Jurisprudence. Edited by Sir S. Smith, C.B.E., M.D., F.R.C.P., D.P.H. Vol. 2. 10th ed. (Pp. 841. 50s.) London: J. and A. Churchill. 1948.

Considerably revised.

Surface and Radiological Anatomy. By A. B. Appleton, M.A., M.D., and others. 3rd ed. (Pp. 332. 35s.) Cambridge: W. Heffer. 1949.

For students and general practitioners.

British Surgical Practice. Edited by Sir E. Rock Carling, F.R.C.S., F.R.C.P., and J. P. Ross, M.S., F.R.C.S. Vol. 5. (Pp. 494. 60s.) London: Butterworth. 1948.

This volume contains the section Hodgkin's Disease—Lymphogranuloma.

Bacterial and Mycotic Infections of Man. Edited by R. J. Dubos, Ph.D. (Pp. 785. 45s.) London: J. B. Lippincott. 1948.

For medical students.

Handbook of Midwifery. By M. Puxon, M.D., M.R.C.O.G. (Pp. 326. 25s.) London: Sylviro Publications. 1949.

For general practitioners and students preparing for qualifying and higher examinations.

Technic of Medication. By A. Smith, M.D., C.M., M.Sc. (Pp. 255. 30s.) London: J. B. Lippincott. 1948.

A brief guide to practical therapeutics.

Practical Aspects of Thyroid Disease. By G. Crile, jun., M.D., F.A.C.S. (Pp. 355. 30s.) London: W. B. Saunders. 1949.

A short volume for physicians and surgeons.

Refraction of the Eye. By A. Cowan, M.D. 3rd ed. (Pp. 287. 27s. 6d.) London: Henry Kimpton. 1948.

The third edition has been revised and brought up to date.

Obstetric Analgesia and Anesthesia. By F. F. Snyder, M.D. (Pp. 401. 32s. 6d.) London: W. B. Saunders. 1949.

Includes a large section on respiratory accidents to the child.

Irish Medical Directory and Hospital Yearbook, 1948-9. 10th ed. (Pp. 404. 15s. 6d.) Dublin: The Parkside Press. 1949.

The Scientific Paper. By S. F. Trelease. (Pp. 152. 11s.) London: Baillière, Tindall and Cox. 1947.

A short guide for research workers.

Essentials of Dermatology. By N. Tobias, M.D. 3rd ed. (Pp. 518. 36s.) London: J. B. Lippincott. 1948.

A short account for students and practitioners.

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BREACH OF FAITH

Ever since the profession agreed to enter the Health Service and to work it as successfully as the administration would allow, it has assumed that the Government would meet its just claims for adequate remuneration. Both general practitioners and the Government have accepted the recommendations of the Spens Committee. The Report on Remuneration prepared by the General Medical Services Committee,[1] which was approved by the Conference of Representatives of Local Medical Committees on March 3 and received the fullest support of the Representative Body on March 29, gave cogent reasons for believing that the remuneration of general practitioners is inadequate, since the central pool is too small. The report has been in the hands of the Ministry since March 4, and a deputation of members of the General Medical Services Committee went to the Ministry on April 14 prepared to discuss remuneration in the light of the report. At that meeting the Ministry refused to consider the document until it had obtained and studied returns from executive councils showing the exact amounts paid to practitioners on their lists. At the same meeting an issue was raised—almost incidentally—of much deeper importance. When the Ministry was asked whether, in the event of a dispute on remuneration, the profession's claims could be submitted through Whitley machinery and finally, if necessary, to arbitration, the reply given was as follows: "It must not be assumed without further discussion that participation in the Whitley machinery necessarily involves, in the event of disagreement, the right to resort compulsorily to arbitration on all subjects." The profession will be disturbed at the negative caution of this reply. Without the right to resort compulsorily to arbitration on a subject such as remuneration the Whitley machinery may well be reduced to mere trifling, the correction of minor administrative errors here and there and the removal of the occasional straw from the camel's back. It is difficult to see how any claims on which the two sides of the Whitley Council fail to agree can be justly decided if, on the Government's prerogative, resort to independent arbitration is denied. Indeed, not only the claim but justice itself would be denied. The profession would lie at the mercy of any Government in power and might have no other course to take but that which it has always most disliked and regarded as a last resort—refusal to work the Service or some part of it.

Some evidence of the Government's assurances was given by the Secretary of the Association last week,[2] and he made this comment: "To withdraw the promise of automatic arbitration in the event of disagreement on matters of remuneration would be a breach of many undertakings, a departure from modern negotiating practice, and potentially dangerous to the profession." The Chairman of Council said[3] at the Special Representative Meeting on May 28, 1948: "The Minister has agreed that when the Service starts on July 5 we can immediately raise with the Whitley Council which will be set up to consider general-practitioner remuneration this matter of the betterment factor and the implementation of the Spens Report. Therefore we are not bound to the present conditions as set out in the remuneration offer if we can prove to the Whitley Council that the amount is not the proper one." Nobody then supposed it to be the Minister's conception of Whitley machinery that a claim should be submitted to it and then, in the event of disagreement, left unsettled or determined arbitrarily by the Minister himself. The assumption that the profession's claims would be justly met was a prime factor influencing doctors to co-operate in working the Service, and a refusal to have them submitted to arbitration would be, as the General Medical Services Committee recorded last week, a gross breach of faith. The formation of the British Medical Guild is therefore particularly opportune, and, fully supported by the profession, it will provide them with a much-needed source of strength.

The profession will be surprised to learn that more than nine months after the Service started the Ministry does not know how many effective principals are on executive councils' lists. It declines to discuss the general practitioners' claims until it has gathered and analysed the information from the executive councils, which it hopes to have done by the middle of May. This delay is particularly remiss because the Ministry's estimate of public money paid out falls considerably short of the profession's moderate demands, which are based on the betterment factor of 170 to take account of the increased cost of living since 1939. The Ministry could surely have consented to begin discussions on the general merits of the case apart from its details. The deputation was further dissatisfied to learn on April 14 that the Ministry could give no assurance that there would be an addition to the pool on account of the increased number of general practitioners in the Service, and that, if remuneration is improved, the increase will not necessarily be retrospective to July 5, 1948. Since there have always been considerably more than 17,900 general practitioners in the Service—the estimate on which the size of the central pool was originally based—refusal to make the increase retrospective to July 5, 1948, when the necessity for it now is clear, would be a grave injustice.

Government spokesmen have admitted that there are grounds for general practitioners' being dissatisfied with their remuneration. On Jan. 21 Mr. Messer said in the House of Commons, "Clearly everybody knows that the situation cannot remain as it is." The profession knows that well; the Minister's further delay in acknowledging it and his lack of assurance that pay would be adjusted for the first nine months of the Service are in lamentable contrast to the speed with which he acted, without carrying out a full inquiry, to cut the remuneration of the ophthalmic medical practitioners.

[1] *British Medical Journal Supplement*, Feb. 19, p. 83.
[2] Ibid., April 23, p. 237.
[3] Ibid., June 5, 1948, p. 147.

AUREOMYCIN

We have already referred[1] to the preliminary account by Duggar and his colleagues[2] of the new antibiotic aureomycin (or, as it is sometimes termed, duomycin). Further information is now available. Like chloramphenicol (chloromycetin), aureomycin is produced by a new member of the genus *Streptomyces*, for which the name *Streptomyces aureofaciens* n. sp. is proposed. There are a number of species included under the category of "yellow" streptomyces and most of them are soil inhabitants. The antibiotic aureomycin is a crystalline powder and is dispensed in the form of a yellow hydrochloride. The salt is soluble in distilled water and in 5% glucose in distilled water: solutions in normal saline precipitate when a concentration greater than 1% of the drug is reached. The powder is stable at room temperature, and in aqueous solution at pH 4.0 no loss of potency occurs after two weeks at 4° C. If the solution is neutralized or rendered alkaline the loss in activity is rapid. Aureomycin is not adsorbed by filters which retain bacteria.[3 4]

When injected intramuscularly solutions of aureomycin in distilled water or glucose cause acute pain lasting for some minutes, followed by a dull pain which may continue for half an hour, even if the drug is dissolved in 1% procaine: with repeated administration the sites of injection become red and tender. Intramuscular medication in man is thus hardly feasible, but fortunately aureomycin is well tolerated and active by mouth. A single dose of 0.5 g. of a crude preparation caused a loss of appetite and nausea, but these symptoms occur only rarely after the administration of more purified preparations in gelatin capsules: they are entirely absent if ½ oz. (15 g.) of colloidol aluminium hydroxide is given with each 100 mg. of the drug. In this way a dose of 100 mg. has been given without any signs of toxicity every two hours to a patient who weighed 40 kg. Difficulty in determining concentrations of the drug in serum or plasma has been reported: loss of activity occurs on incubation at 37° C., serum proteins have a neutralizing effect, and a relatively high concentration of the antibiotic is necessary for minimal inhibition of growth of the test organism, *Klebsiella pneumoniae* type A. Some observers[5 6] prefer a strain of *Bacillus cereus* var. *mycoides* as the test organism, others[11] the strain of *Bacillus subtilis* 219 which is used in the assay of streptomycin, or a haemolytic streptococcus. A level of 0.6 μg. per ml. of serum is the lowest concentration of drug that can be measured with *K. pneumoniae*. This concentration is obtained by an oral dose of 0.5 g. and an intramuscular injection of 40 mg.: after oral administration alone repeated doses of 1 g. every six hours give detectable amounts in the blood—about 2 μg. per ml. Aureomycin appears rapidly in the urine, and excretion continues for two to three days after a single oral dose of 0.5 g. In adults given repeated oral doses of 1 to 2 g. daily concentrations up to 256 μg. per ml. may be found in the urine. After intravenous injection aureomycin passes into the cerebrospinal fluid.

The antibiotic range of aureomycin is a wide one and has been studied by a number of observers.[7-11] Pneumococci, gonococci, meningococci, and *Streptococcus pyogenes* are all inhibited by 1 μg. or less of aureomycin per ml. Staphylococci and most strains of Gram-negative bacilli, including species of salmonella, are inhibited by concentrations varying from 1 to 25 μg. per ml. Strains of two species, *Proteus vulgaris* and *Pseudomonas aeruginosa*, are moderately resistant, requiring from 125 to 250 μg. per ml. for complete inhibition. There is no cross resistance with penicillin- and streptomycin-resistant strains, nor with strains that have become resistant to polymyxin or bacitracin. Resistance to aureomycin is difficult to produce either *in vivo* or *in vitro*. Some increase in resistance, however, has been induced against *Proteus vulgaris*, *Pseudomonas aeruginosa*, and *Bacterium coli*: such aureomycin-resistant strains do not produce any aureomycin-inhibiting substance corresponding to penicillinase. In experimental animals the toxicity is very low: mice tolerated by mouth 1,500 mg. and rats 3,000 mg. per kg. of body weight.

Accounts of the treatment of numerous human infections with aureomycin have now been published. Collins and his colleagues[12] reported the results obtained in 66 cases of gonorrhoea: only six failed to respond, and these had been given treatment for one day with a total of only 1.0 or 1.5 g. of aureomycin. Pneumococcal pneumonia has been successfully treated with 0.5 g. every six or eight hours, the total doses being from 10 to 20 g. Good results have also been obtained in meningococcal septicaemia. Claims have been made for the curative action of aureomycin in brucella infections: but in view of the difficulties in assessing the true value of any drug in these infections further controlled studies are required. In bacteriaemia due to *Bacterium coli* and in salmonella infections aureomycin has failed: in the treatment of typhoid and paratyphoid it is thus inferior to chloramphenicol (chloromycetin). On the other hand Wright and his colleagues[13] have shown that granuloma inguinale is readily controlled by aureomycin, and in view of its low toxicity it may well prove superior to streptomycin. The chemotherapeutic activities of aureomycin are not restricted to bacteria. Wong and Cox,[14] as well as Wright and his associates,[13] have shown that aureomycin has an effect on the viruses of lymphogranuloma venereum and psittacosis and also on rickettsial infections, including epidemic and murine typhus, scrub typhus, Rocky Mountain spotted fever, Q fever, and rickettsialpox.[14-16] There is also some evidence that non-specific urethritis can be controlled by aureomycin. Finally, Braley and Sanders[17] have reported on the use of a 0.5% solution of a borated salt of aureomycin in 100 patients with conjunctival and corneal infections. This was very effective in coccal infections, and

[1] *British Medical Journal*, 1948, **2**, 1112.
[2] *J. Amer. med. Ass.*, 1948, **138**, 117.
[3] Schoenbach, E. B., Bryer, M. S., and Long, P. H., *Ann. N.Y. Acad. Sci.*, 1948, **51**, 267.
[4] Finland, M., Collins, H. S., and Paine, T. F., Jr., *J. Amer. med. Ass.*, 1948, **138**, 946.
[5] Dornbush, A. C., and Pelcak, E. J., *Ann. N.Y. Acad. Sci.*, 1948, **51**, 218.
[6] Dowling, H. F., Lepper, M. H., Sweet, L. K., and Brickhouse, R. L., ibid., 1948, **51**, 241.
[7] Chandler, C. A., and Bliss, E. A., ibid., 1948, **51**, 221.
[8] Little, P. A., ibid., 1948, **51**, 246.
[9] Bryer, M. S., Schoenbach, E. B., Bliss, E. A., and Chandler, C. A., ibid., 1948, **51**, 254.
[10] Long, P. H., Schoenbach, E. B., Bliss, E. A., Bryer, M. S., and Chandler, C. A., *Calif. Med.*, 1948, **70**, 157.
[11] Price, C. W., Randall, W. A., and Welch, H., *Ann. N.Y. Acad. Sci.*, 1948, **51**, 211.
[12] Ibid., 1948, **51**, 231.
[13] Ibid., 1948, **51**, 318.
[14] Ibid., 1948, **51**, 290.
[15] Anigstein, L., Whitney, D. M., and Beninson, J., ibid., 1948, **51**, 306.
[16] Lennette, E. H., Meiklejohn, G., and Thelen, H. M., ibid., 1948, **51**, 331.
[17] Braley, A. E., and Sanders, M., ibid., 1948, **51**, 280.

it completely cured four patients with conjunctivitis due to *Haemophilus influenzae* and four of five patients infected with the Morax–Axenfeld diplobacillus. Benefit was obtained in herpes simplex of the cornea and in one case of trachoma, but only 8 of 27 patients with epidemic keratoconjunctivitis were cured, and a single case of molluscum contagiosum of the conjunctiva was unaffected.

It is thus obvious that aureomycin has potentially a wide field of usefulness: it possesses the advantages of low toxicity and of not easily inducing the formation of resistant forms—the two factors which have limited the usefulness of so many promising antibiotics.

STREPTOMYCIN IN TUBERCULOUS BRONCHOPNEUMONIA

Streptomycin has been available in this country since January, 1947, and the Medical Research Council has already reported on its use in tuberculous meningitis[1] and in pulmonary tuberculosis.[2] Elsewhere in this issue Dr. R. McLaren Todd describes an investigation, conducted in co-operation with the Medical Research Council, of streptomycin in tuberculous bronchopneumonia in children. The number of patients obtained for the trial was less than was expected, but these eight cases form the largest series so far published. The prognosis of tuberculous bronchopneumonia in childhood is generally poor, especially when, as in seven out of eight of Dr. Todd's cases, the patient is exposed to repeated massive infection in his home.[3] Of eight children admitted to Alder Hey Hospital with this disease in the two years before the introduction of streptomycin treatment, seven died in hospital and the eighth probably succumbed after being taken home against advice.

Tubercle bacilli were obtained from all Dr. Todd's cases, and *x*-ray examination showed that all had extensive bilateral disease. Three of the children were less than a year old; three were between 1 and 2 years, and the other two were aged 5 and 11 years. Two died: one infant aged 5 months died with miliary dissemination 27 days after starting treatment, the course of the disease appearing to be unaffected by streptomycin. In the other fatal case a child aged 5 developed changes in the cerebrospinal fluid typical of tuberculous meningitis; he received intrathecal injections of streptomycin for 29 days and intramuscular injections for a further 2½ months (19 weeks in all). After treatment was stopped his general condition and weight improved for three months, but radiographs showed little change, and tubercle bacilli were still found in the gastric washings. He then relapsed and died two months later. In this case the organisms were isolated on three occasions at the end of treatment, and they showed a uniform but slight degree of streptomycin resistance; it is of great interest that organisms cultured two and three months later, with no further streptomycin treatment, were very much more resistant. In the three other cases in which cultures were obtained during treatment no significant rise in streptomycin resistance was shown after 6, 15, and 22 weeks' treatment. Of the surviving cases, five out of six were making good progress, clinically and radiographically, four to sixteen months after stopping treatment. The sixth child improved greatly during 12 weeks' streptomycin treatment, but there was little radiographic change. After treatment was stopped the general condition deteriorated, and she had bouts of pyrexia.

The streptomycin was given in a dosage of 0.02 g. per lb. body weight every 24 hours, administered in four six-hourly injections; the present practice would probably be to give the full dose in one or two injections. Treatment continued for 12–22 weeks. Mild urinary and skin changes were noted as toxic manifestations of the drug, but there were no apparent ill effects on the vestibular apparatus. It would be of interest to know what tests were used to detect vestibular abnormality; objective abnormalities are often demonstrable even when the patient has no symptoms.

There is little evidence that the primary tuberculous complex is improved by streptomycin, and the drug could not be expected to cause a lung to re-expand which had collapsed as a result of tuberculous infection of the hilar lymph glands, though of course re-expansion often occurs spontaneously. But in the unusual cases in which the aspiration of material from a lymph gland which has ruptured into a bronchus results in tuberculous bronchopneumonia streptomycin is now the treatment of choice. The fact that diminished streptomycin sensitivity was demonstrated in the organisms from only one of Dr. Todd's cases suggests that longer courses of treatment might be tried when response to treatment is delayed or incomplete. In the absence of any effective alternative it also seems justifiable to give a second course of streptomycin if the patient relapses.

PROPOSED HEALTH SERVICE FOR THE U.S.A.

At the end of last week President Truman requested Congress to bring in legislation for the setting up of a national health service in the U.S.A., and Bills have already been introduced into both Houses. It is reported[1] that hearings will begin later this week in the Senate before the Health Subcommittee of the Labour and Public Welfare Committee, and it looks as if the lively political struggle which we forecast[2] a few weeks ago is about to begin. Mr. Truman's recommendations to Congress are largely based on the proposals contained in the report entitled "The Nation's Health"[3] which was submitted to him last September by the Federal Security Administrator. The President suggests that there should be a comprehensive system of national health insurance, and grants should be made by the Federal Government for the expansion of medical schools, for the construction of hospitals, and for the improvement of public health services. According to a report in the *Manchester Guardian* (April 23) he stated: "Our objective must be twofold—to make available enough medical services to go around, and to see that everybody has a chance to obtain those services."

Mr. Truman said that there was no longer much difference of opinion about the objects of his programme; the financial problem was the chief of the difficulties involved. The cost of medical treatment was now beyond the means of all except those with large incomes and should be met by social insurance. The suggested method of payment

[1] *Lancet*, 1948, **1**, 582.
[2] *British Medical Journal*, 1948, **2**, 769.
[3] Bernard, C., Debré, R., and Lelong, M., *Bull. Acad. Méd., Paris*, 1925, **93**, 299.

[1] *The Times*, April 26.
[2] *British Medical Journal*, 1948, **2**, 866.
[3] See *British Medical Journal*, 1948, **2**, 869.

of doctors' bills is to be from a fund collected by special taxes, but this would not mean that doctors became Government employees. The doctor–patient relationship would not be affected, and patients, doctors, and hospitals would be able to make private arrangements for medical care outside the national scheme if they so desired.

There is likely to be much opposition to the President's proposals, especially to national health insurance. According to *The Times* (April 23) the American Medical Association has issued a pamphlet entitled "Documented Indictment of Socialized Medicine." This describes medical care under the British N.H.S. as "assembly line, serial number medicine where patients have become names on a card index, standees in a lengthy queue waiting to be rushed through a doctor's office." In a leading article in the *Journal of the American Medical Association* of April 2 this statement appears: "Indeed, the great hazard of all such legislation as that which perpetrated the National Health Act on the people of Great Britain is the difficulty of eliminating such a procedure even after its faults have become horribly obvious." Certainly the British health service has many critics in America, as it has in this country, but as an experiment it is being watched with the greatest interest by observers from all over the world, including many from the U.S.A. No doubt when Congress debates the President's proposals we shall hear not only the worst about the Service in Britain but also the best that can be said for it.

NEOMYCIN

The limitation imposed on the usefulness of streptomycin by the readiness with which resistant strains emerge during treatment is well known, as also are the toxic effects of this antibiotic. On the other hand, the work of the Streptomycin in Tuberculosis Trials Committee[1] of the Medical Research Council has established under rigorously controlled conditions that streptomycin is of definite value in acute pulmonary tuberculosis of recent origin, and the implication is that if the two undesirable properties of the drug could be discounted, particularly its tendency to produce resistance in bacteria, then a further advance in therapy could be made. There is therefore great interest in any research designed to discover substances of similar chemotherapeutic potency to streptomycin but without its two disadvantages. Waksman, who in 1944 discovered streptomycin,[2] has now reported[3] the further discovery of a new antibiotic to which the name neomycin has been given. This is produced by a different species of streptomyces, and its discovery is the result of a deliberate search for antibiotics produced by soil fungi of this group which might be active against strains of mycobacteria resistant to streptomycin. Work on neomycin is still at an early stage, and it has not yet been prepared in crystalline form. However, experiments have been carried out both with mice and with fertilized hen's eggs as well as *in vitro*. So far as can be judged at this stage, neomycin is as active against streptomycin-resistant as against streptomycin-sensitive strains of tubercle bacilli, is effective *in vivo*, is less toxic than streptomycin, and up to the present has not induced bacterial resistance. These are encouraging findings so far as they go. For the rest, neomycin is stated to be basic, heat-stable, and soluble in water. Since the soil fungus by which it is produced is responsive to deep culture, it will be possible to increase supplies without much difficulty, and, if justified by further research, neomycin should fairly soon arrive at the stage of clinical test. In the interval an attitude of sceptical anticipation is the only possible one, for the drug may possess undesirable qualities not yet apparent. But this at least can be said: that if one strain of streptomyces has been found which produces a substance not possessing the two chief disadvantages of streptomycin, then, whatever its immediate fate, the hope is encouraged that other improved antibiotics may also be discovered.

[1] *British Medical Journal*, 1948, **2**, 769.
[2] *Proc. Soc. exp. Biol. N.Y.*, 1944, **55**, 56.
[3] Wakaman, S. A., and Lechevalier, H. A., *Science*, 1949, **109**, 305.

HYGIENE BEHIND THE BAR

The cleansing of glasses in public houses is one of the special problems of food and drink hygiene. The main difficulty is the rapid and continuous circulation of the glasses, reaching a peak, for example, just before closing time or on a hot Bank Holiday. About two years ago Dr. Irene Hutchinson[1] pointed out in this *Journal* the ineffectiveness of prevalent methods of washing and drying cutlery and crockery in destroying pathogenic organisms. Investigating a number of old and new premises in and around London, Davis and Resuggan[2 3] found that the usual practice was to give the glasses a quick rinse in water, usually at 95°–115° F. (35°–46° C.) but sometimes cold, and to leave them to drain for a variable period depending on the rush of business. The water in the sink or bowl was changed only when it was more or less deeply coloured or when it was convenient to do so, and no rinse in clean water was given. The problem in the United States may be rather different from that in this country, but the ideal practice recommended by Adams[4] is to lead hot and cold running water to a two- or three-compartment sink, where the glasses are successively washed and brushed in water containing a good washing compound, rinsed in hot water, and finally treated for two minutes with a suitable disinfectant. The single-service paper cup has been suggested, but this is more likely to find favour in the cafeteria than in the public house.

In this country improved methods are not likely to be brought into use unless they are simple, reasonably cheap, and in line with existing practice. Bunker[5] has pointed out that it is the water in the rinsing bowl which is responsible for the dispersion and transmission of bacteria and that the most promising procedure is to add antiseptic to the water. The substance must be non-poisonous, non-irritant, and completely safe; it must kill bacteria quickly; it must impart no taste and must not alter the quality of the beverage, such as the "head" of beer; and it should have a detergent action to remove residues. Chlorine is ruled out because of its persistent taste and smell. According to both Davis and Resuggan and Bunker a new compound of the quaternary ammonium halide type, dioctyl-dimethyl-ammonium bromide, possesses the desired properties. It is an amber syrupy liquid, freely soluble in water, and effective in high dilution against streptococci, staphylococci, and coliform bacteria. Glasses rinsed in water containing about 1 part in 15,000, with sodium carbonate and hydrated sodium metasilicate added, drained clean, and no flavour was imparted to the beverage. Drops of this antiseptic in a dilution of 1 in 3,300 produced no inflammation in the eye of a rabbit. In tests carried out in public houses the addition of the compound produced a fall in the viable bacteria in each millilitre of rinsing water from many thousands to a few hundreds or less—this reduction being maintained even after the washing of 200 glasses. In some tests cold water was used, in others water at an initial temperature of 112°–120° F. (44.2°–48.8° C.). While it is too early to suggest permissible standards, it should not be

[1] *British Medical Journal*, 1947, **1**, 134.
[2] *Proc. Soc. appl. Bact.*, 1946, **1**, 20.
[3] *J. Inst. Brewing*, 1947, **53**, 15.
[4] *Milk and Food Sanitation Practice*, 1947. New York: The Commonwealth Fund.
[5] *Publ. Hlth, Lond.*, 1948, **61**, 85.

difficult to reduce the bacterial count on standard agar to less than 500 bacteria per millilitre and to secure the absence of coliform bacilli from 1 ml. The cost should be about a penny for 200 glasses.

Shortage of glasses, space, and assistance makes the ideal of a clean, dry, sterile glass for each customer impracticable, but a step in the right direction can be made if the results of the investigations referred to are sensibly applied. Finally, a word might be said about the bartender's towel. If it cannot be abolished it should be frequently changed, and used solely for glasses which have been treated with antiseptic.

THE RELIABILITY OF LABORATORY TESTS

If a decision is to be based on or influenced to any extent by a laboratory test, then it follows that the result obtained must be precise and that the test should not be so complex that many possible sources of error are present. Belk and Sunderman[1] have checked the accuracy of the results of some common chemical measurements made in hospitals throughout the State of Pennsylvania. The 59 laboratories co-operating in the investigation were asked to analyse the following: solutions of glucose, sodium chloride, urea, and calcium (in concentrations similar to that found in human blood); serum for the measurement of total protein, albumin, and globulin; and citrated whole blood for the estimation of haemoglobin concentration. The figures received from the laboratories were surprisingly inaccurate. The results were grouped by the referees into three categories—satisfactory, unsatisfactory, and gross error. The sodium chloride analysis was done best—68% of the results being satisfactory. The albumin estimation was the worst —20% being satisfactory, 64% unsatisfactory, and 16% having a gross error. A questionary was sent to 95 pathologists in order to obtain their explanation for such unreliable results, and they included the following as contributory factors: (1) poorly trained technicians (in 82 answers); (2) inadequate number of technicians (in 80 answers); (3) lack of understanding between pathologist and staff (in 64 answers); (4) poor equipment (in 63 answers); and (5) insufficient floor space (in 57 answers).

In this country Biggs and MacMillan[2] have assessed the accuracy of some common haematological methods used in routine laboratory work. These included: haemoglobin estimation, red cell count, and packed cell volume (from which errors in estimating the colour index, mean corpuscular volume, and mean corpuscular haemoglobin concentration could be calculated); mean cell diameter derived from the Price-Jones curve; reticulocyte count; platelet count; whole-blood coagulation; and red-cell fragility. The white cell count was not included, because it is widely recognized that this has a large error. The results obtained in these tests by laboratory technicians and doctors were analysed in detail. As might be expected, the disagreement between observers was an important source of error. For some of the variables the variation around the mean value was large, and it was evident that some tests cannot be expected to measure small differences reliably. The red-cell count had an error of 9%, and thus the colour index and mean corpuscular volume cannot be relied on to record the small differences of interest to the clinician. Reticulocyte counts made by different observers were so wide apart that no useful limits of probable variation can be set, and in platelet counting the error was so large that only conspicuous and progressive changes should be considered significant. The authors concluded that "an increase in the reliability of routine work will follow the selection of those methods which give the best results in the hands of the average laboratory worker." If the results of any test are to be of value to the clinician, then the test must be able to detect differences smaller than those which are of clinical significance. It seems that not all laboratory tests meet this requirement, for some of them demand more skill than the average laboratory technician possesses.

[1] *Amer. J. clin. Path.*, 1947, **17**, 853.
[2] *J. clin. Path.*, 1948, **1**, 269.

MELANOMA OF THE CHOROID

In a series of papers from 1931 to 1942 Callender and his associates in the U.S.A. stressed the significance of reticulin in the prognosis of melanomas of the choroid. The richer the reticulin content the better they found the prognosis to be. They also held that prognosis could clearly be assessed by the cell type: the lowest mortality was in the group of cases with spindle-cell A tumours; it was considerably higher with spindle-cell B, and highest with epithelioid tumours. The importance of the melanin content as a prognostic aid was not so marked, though the mortality was higher in the group of cases in which the pigment content of the tumours was classed as heavy. Callender's method of classification has proved of value, and is confirmed in broad outline by Benjamin, Cumings, Goldsmith, and Sorsby[1] in a study of 250 cases of melanoma of the choroid. Their statistical assessment, however, does not confirm Callender's results in detail. In the first place they found a much better prognosis—a survival rate of 80.7% in a period of five years in their series, against 52% in that of Callender. The discrepancy in survival rates is still more noticeable if a period of 10 years is considered, the respective rates being 73.4% and 34.0%. Again, while Callender was able to grade mortality in relation to each of the cell types, melanin content, and reticulin content, the British workers obtained a more distinctly limited relationship. The only statistically significant findings they could extract were an increased mortality in the group of cases with epithelioid-cell tumours, a lower mortality in cases where the pigment content of the tumours was classed as light, and a higher mortality when the reticulin content was low. In criticizing assessment of mortality they rightly point out the need to take into account macroscopic features such as vascularity, haemorrhage, necrosis, and above all extension beyond the uvea.

Melanomata of the choroid are puzzling tumours. The high survival rate in this condition is probably unique in cancer statistics. It is difficult to grade the tumours owing to their histological complexity, and their relationship to melanomata elsewhere in the body is not readily assessed. On the one hand it has been suggested that the tumours are of mesodermal origin, on the other that they are of ectodermal origin. These complexities are discussed fully by Reese,[2] who attempts to sort out three distinct varieties of choroidal melanoma. Two varieties he considers to be neurogenic in origin; these are the tumours arising from the Schwann cell and the naevus cell, and the tumours arising from the pigment epithelium of the retina and ciliary body. These two varieties are therefore not strictly speaking choroidal tumours at all. The third group he regards as mesodermal in origin—chromatogenic melanoma arising from the uveal tract. His classification is largely a compromise between the conflicting hypotheses of ectodermal and mesodermal origin of choroidal tumours, and it would gain more ready acceptance if it could be shown to possess a prognostic significance.

[1] *Brit. J. Ophthal.*, 1948, **32**, 729.
[2] *Amer. J. Ophthal.*, 1947, **30**, 537.

ANOPHELES ERADICATION IN CYPRUS

BY

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The history of the malarial fevers in Cyprus has been long and tragic, and over the centuries these fevers have cost the island much in human life and have been the major cause of chronic ill-health and invalidism. It is on record that "fevers and bad air" were a source of much trouble in the year 1394, and in a letter written by Namik Kemal, who was a Turkish poet of national reputation, a few years before the British occupation of the island in 1878 it is stated that "the sum of noxious pests sounds like that of the most modern weapons, and the diseases, the mildest of which is fever, are capable of killing a person much quicker than bullets." In the early days of occupation the British Army suffered severely from malaria, and steps were taken to reduce the breeding places of mosquitoes by draining and filling of swamps and planting of trees, particularly in the vicinity of the main towns. These operations brought some improvement, but the villages remained open to the same menace as previously.

In the year 1900 the District Medical Officer, Larnaca, Dr. G. A. Williamson, discovered malaria parasites in the blood of 470 out of 503 patients diagnosed clinically as cases of malaria; infestations were divided almost equally between *Plasmodium falciparum* and *P. vivax*, plus an occasional *P. malariae*. The three main species of parasite were thus proved to be present in the island. During 1912 the High Commissioner, Sir Hamilton Goold-Adams, informed the Secretary of State that he had recently ascertained the widespread prevalence of malarial fever in the inhabitants of the island, and that, though steps had been taken by Government to combat the menace, he considered that more could be done, and requested that an expert malariologist be sent to Cyprus to study the disease and advise concerning necessary preventive measures. In reply to this request Sir Ronald Ross visited the island in 1913 and found that 25.4% of the children had splenic enlargement. On his recommendation certain marshes were drained and a special staff was trained to undertake mosquito-control work. These drainage works were carried out in various places which were ideal breeding-centres for *Anopheles elutus*, a known vector of malaria. It was noted that coincident with these measures the incidence of enlarged spleen and active cases of malaria underwent a great diminution, and conditions remained apparently much improved until after the 1914–18 war, when they rapidly deteriorated for various causes and remained unsatisfactory until the beginning of the Anopheles Eradication Campaign in 1946.

There were three principal vectors of malaria in Cyprus: *A. superpictus*, breeding in shallow collections of water exposed to full sunlight; *A. elutus*, breeding in temporary collections and marshy collections of water; and *A. birfurcatus*, breeding in heavily shaded and cool water, including both wells and surface collections.

In 1935 Dr. Barber, of the International Health Division, Rockefeller Foundation, found a parasite incidence of 70% in certain village children, and sickness due to malaria at times assumed almost epidemic proportions. Careful dissections of *A. superpictus* indicated a sporozoite rate seven times greater than that of *A. gambiae* in certain malarial regions in Africa.

From the above information it is obvious that the problem of anopheles eradication in Cyprus was both complicated and urgent; nevertheless Dr. R. E. Cheverton, a former Director of Medical Services in the island, strongly believed in the possibility of obtaining the total eradication of anopheles vectors of malaria, and he therefore arranged for one of us (M.A.) to visit Egypt in 1945 and to study the campaign for the eradication of *A. gambiae* being carried out in the Nile Valley. Later Dr. F. L. Soper, of the Rockefeller Foundation, visited Cyprus and expressed the view that there was every possibility of eradicating the anopheles from the island.

In 1946, working on this basic advice, an experimental area was chosen about 500 square miles (1,295 km.^{2}) in extent and the species eradication carried out with vigour and with complete success; it was thus considered justifiable to extend the campaign to the whole island. Funds for the experimental work in 1946 came from the Colonial Development and Welfare Scheme. It was estimated that £310,000 would be the approximate cost of securing island-wide freedom from anopheles vectors.

Organization of Campaign

After the preliminary selection and training of staff and a comprehensive survey of breeding-places the island was divided into six districts, subdivided into 39 sections, 111 zones, and 556 blocks. One block was the area which could be covered by one man in twelve working days. A group of blocks constituted a zone under a zone officer, and a group of zones constituted a section under a section officer. Each section officer was assisted by special checkers of larvae and adult mosquitoes. Each district was under the direct administration of headquarters through the medium of the district officer, and in order that close and accurate supervision could be maintained the executive officer had under his immediate direction independent checkers, who could be sent to any district, section, zone, or block as considered advisable.

The executive officer (M.A.) was in entire charge of the whole operation, including the purchase and issue of stores, equipment, and larvicides, and the maintenance of records, and it was only necessary for him to approach the Director of Medical and Health Services in case of difficulties necessitating extra assistance and advice and to report progress.

The larvicides used during most of the campaign consisted of a 3 to 4% solution of D.D.T. in gas oil. "Malariol," Paris green, and simple fuel oil were used on certain occasions, and during 1948–9 D.D.T. and gammexane smoke were utilized in the case of buildings with high ceilings and in certain inaccessible places. Major drainage schemes were not attempted, though several marshy areas exist. Spraying was carried out with locally made or imported "flit guns," preference being given to those with a long handle.

The campaign proper started in April, 1946, with a direct attack on all breeding-places, the results being noted with particular care and the presence of one larva being sufficient to declare a block still positive. A protective zone about ten miles wide, situated between the eradication area and the rest of the island, was subjected to intense mosquito control with the object of preventing any reinfestation of the eradication area. During the winter months of 1946–7, and also in subsequent years, hibernating adult anopheles were attacked by subjecting all human and animal shelters to light treatment with D.D.T., the object being to destroy any adults and thus reduce the possibility of any widespread breeding in March and the later months.

It has to be appreciated that, as not all species of anopheles in Cyprus are necessarily frequenters of houses, search and attack had to be made in caves, both natural and artificial, tombs, tree trunks, etc., and checking could not be limited to villages and other settlements but had to extend over every part of the island. This needed both courage and ingenuity on the part of those concerned, who had on occasion to be lowered by ropes to deal with breeding- or sheltering-places which could be approached only from the perpendicular heights of cliffs or mountains.

Results

The effect of the campaign on the incidence of malaria has been remarkable. During 1944, two years previous to the opening of the scheme, 7,686 cases were reported, and this figure was reduced during 1948 to 406, of which number only three were considered to be recent infections.

In 1944 the percentages of school-children examined who had splenomegaly and parasitaemia were 32.4 and 51.9 respectively, figures which by 1948 had fallen to 10.6 and 1.3 respectively. In 1948 blood films from 655 infants (under 2 years) living in formerly highly malarious villages were examined and found negative for parasites.

At the time of writing this account not a single anopheles larva or adult had been discovered in the whole island for thirteen weeks, and it is anticipated that, apart from maintenance work, the campaign proper will end within two months.

It is not possible in a brief article to detail the numerous and unexpected difficulties which were encountered. At one stage the political situation in the Near East caused an interruption in the regular supply of oil, which for a period had serious repercussions on the task in hand. Delays also occurred in the receipt of essential larvicides and other items, but fortunately these difficulties were gradually overcome.

Our grateful thanks are due to Professor G. Macdonald, Director of the Ross Institute of Tropical Hygiene, London, for his advice, criticism, and assistance; to Drs. L. Soper and Bruce Wilson, of the Rockefeller Foundation, for their great help in the initial stages; to Dr. J. R. Busvine for his independent and confirmatory checking during 1948; and finally to all those who have given assistance and encouragement.

THE RED CROSS UNDER REVISION

[FROM OUR CORRESPONDENT IN GENEVA]

A diplomatic conference for the establishment of new international conventions for the protection of war victims was opened in Geneva on April 21, and is expected to last for six weeks. Forty-five States, including Soviet Russia and the Vatican, are participating. The United Kingdom delegation is headed by Sir Robert Craigie and consists of representatives of the War Office, Admiralty, Ministry of Transport, Home Office, and Foreign Office. Several international organizations, including WHO, are observers. The first meeting was held at the Hotel de Ville, in the same room in which the Red Cross was established in the middle of the last century.

Three draft conventions are under consideration. Two of them, for the relief of the wounded and sick in the armed forces in the field and for the treatment of prisoners of war, are proposed revisions of the conventions concluded at Geneva in 1929. The third is a convention for the protection of civilians in time of war. All three were considered at the eighteenth International Red Cross Conference held recently at Stockholm, and now they are being critically reviewed by the representatives of Governments.

Already the United Kingdom delegation has put forward some criticisms of the International Red Cross proposals. It has suggested that certain passages in the draft convention for the relief of the wounded and sick, while appropriate to the circumstances of war as it was waged in the middle of the nineteenth century, bear no evident relation to the conditions of war usual in the middle of the twentieth century. The International Red Cross, in the view of the British delegation, appears to consider that all those who are charged with caring for the wounded and sick are outside the combatant forces altogether and can therefore be regarded as neutrals in any conflict. In fact medical services now form an integral and necessary part of the whole fighting machine, and their primary purpose is to ensure the fitness of combatant personnel to carry on the conflict. Here, of course, there is a distinction between the medical services of an army and of a humanitarian organization like the Red Cross. "The United Kingdom Government recognizes that, in the presence of wounded and sick, medical personnel should behave in the tradition of the Red Cross and should treat without distinction, except on grounds of need, the personnel of their own forces and those of the enemy." But the delegation goes on to urge that this fact should not be allowed to obscure the fundamental change which has taken place since the Red Cross emblem first appeared on the battlefield—namely, that the medical services of military forces are now organized with positive duties designed to maintain and increase the fighting efficiency of such forces. It presses strongly the view that all personnel, whether "protected" or not, falling into the hands of an adverse belligerent should be prisoners of war; that among prisoners of war all those required to care for the sick and wounded in the hands of the enemy should have the necessary freedom and facilities for carrying out their work, and that surplus doctors and nurses should be repatriated.

The draft convention for the protection of civilians in time of war is a document of 140 articles. It deals largely with the care of internees. It is laid down that every place of internment must have an adequate infirmary under the direction of a qualified doctor. Isolation wards must be set aside for contagious disease. Where special treatment, surgical operation, or hospital care is necessary, internees must be admitted to institutions where such treatment is given, and the care they receive must not be inferior to that provided for the general population. Internees, says one article, shall have the attention preferably of medical men or women of their own nationality. The costs of treatment, including those of any apparatus necessary for the maintenance of internees in good health, particularly dentures and other prostheses, and spectacles, shall be borne by the detaining power. Medical inspections of internees are to be made at least once a month, with the object of supervising their general health, nutrition, and cleanliness, and detecting contagious diseases, especially tuberculosis, malaria, and venereal conditions. These inspections are to include, wherever possible, periodical radiological examination and checking of weight. It is also provided that international standards of nutrition may be applied to the quantity, quality, and variety of food for internees, with additional food for expectant and nursing mothers and children.

This important conference has hardly yet got into its stride. The first days, as is usual in these big international assemblies, were frittered away over exasperating points on procedure, objections, validity of credentials, and admission of observers.

A HEALTH SERVICE FOR CHILDREN

CHADWICK PUBLIC LECTURE

A lecture under the auspices of the Chadwick Trust was delivered at Westminster Hospital Medical School on March 2[illegible] by Dr. HELEN MACKAY.

Dr. Mackay said that a hundred years ago there were no children's hospitals in this country and general hospitals discouraged the admission of children; half the inmates of workhouses were children. Eighty years ago the forerunners of infant-welfare centres made their appearance, but not until 1924 was the first chair in paediatrics established. Nowadays every child had a doctor, but there were still some deficiencies in the service. Undergraduates received a minimum of training in child care, and were often in difficulties when confronted with the sick child. Before last July doctors in most clinics could treat minor ailments. Now in many areas they had to say that they were not allowed to do so, and the mother must take the sick baby to some overcrowded surgery or outpatient department. School medical work varied in different areas, some school doctors showing initiative, others being tied up by regulations which were not to the benefit of the child. In many hospitals there was no specially trained nurse in charge of the children's ward; in others children were scattered throughout the wards for adults; and in some hospitals wards were overcrowded with children who could have been nursed at home. The selection of cases for hospital should be controlled by doctors with experience of paediatrics.

The first essential in planning a health service for children was a well-trained staff with good facilities working as a team. A few fairly large hospitals were more economical in staff than numerous small ones. It was important to build up a small number of really adequate hospital units as quickly as the financial position allowed. Each region should have an overall plan, and the people on the spot must get together not only on principle but on detail. It was important also that the general practitioner should have adequate paediatric training. A large part of the clinical work in schools and welfare centres should be done by general practitioners interested in paediatrics, their numbers being augmented by those who took service as child-welfare and school medical officers.

Hospital Planning

The hospital service, Dr. Mackay continued, should have paediatric units in large hospitals, and regional centres for teaching and research. In most hospital areas the paediatric

unit would have beds in one hospital, and if a management committee area did not contain such a unit it should have a branch paediatric out-patient department based on a unit elsewhere. Beds should be provided for nursing mothers, and all in-patient children under puberty should be dealt with in the children's department. Beds for neonatal cases should be under the direction of one or two paediatricians, one of whom might be the children's health officer. As soon as a unit could function in isolation it must be provided with the services of all the necessary specialists and sub-departments. Units should not be too small, and they should be so sited as to make the best possible use of existing facilities, which should be within reasonable travelling distance from every part of the region.

Dr. Mackay also pleaded for paediatric regional centres with the outlook and status of university units. These centres should be equipped for highly specialized forms of treatment and investigation. Fever hospitals and general children's hospitals should be fused into paediatric units; the present division was artificial and served no good purpose. Long-term patients should be treated in general children's hospitals staffed and equipped to deal with all types of cases. Some children needed treatment in orthopaedic wards, others might lie in cottage homes under the care of house mothers.

Psychiatric treatment should be undertaken by paediatricians and general practitioners, but there should be fully staffed child psychiatric units adjacent to children's hospitals. Many children with psychiatric symptoms needed a full physical investigation. Psychiatrists working in these units should have had practical training in general paediatrics.

Initial Steps

Much could be done to obtain such a service in the immediate future. The first step was the overall planning, at least in outline, and the provision of facilities for training was a primary obligation. Adequate undergraduate training units should be set up, and this would necessitate the provision of much larger departments than existed at present. Properly staffed and equipped regional beds would also be needed for postgraduate training. Appointments should not be filled unless the candidates were of the right calibre and adequate facilities were available. If each hospital sought to create its own department and train its own staff regardless of the larger needs the future of the service might be in jeopardy.

The nursing must be done by nurses who were fond of children, wanted to look after them, and were trained for the work. School nurses and health visitors should also be given the opportunity of keeping up their knowledge of sick children. The interchange of nurses working at clinics or in hospitals should be encouraged. She thought also that mothers should be brought into hospitals to help with the nursing of their own children. "Play" people should be appointed who could provide the children with amusement and occupation. A central bureau should be set up in each region where statistics of child health would be available.

Hitherto there had been little inducement to nurses, medical students, or doctors to undertake paediatric work. If the National Health Service offered in paediatrics the same prospects as it offered in other branches of medicine, said Dr. Mackay in conclusion, the work, which in itself was so rewarding, would gain all the recruits needed.

The National Association for the Prevention of Tuberculosis discusses in a memorandum recently issued the policy for mass radiography in the future. Groups that should receive priority in being radiographed include nurses, doctors, and workers in certain dusty occupations, and entrants to the military and civil services. Other groups might include secondary-school leavers, food handlers, and expectant mothers. The memorandum admits that the work of mass radiography is often monotonous for those who do it and suggests that it should not be regarded as a career in itself but as part of the experience necessary for a fully qualified physician of a chest clinic. More propaganda is favoured to encourage the public to be radiographed, since there is evidence that the initial enthusiasm is waning.

Nova et Vetera

GENERAL ANATOMY, MICROSCOPIC ANATOMY, OR HISTOLOGY?

In Great Britain textbooks of histology have been designed almost entirely for medical students. They have been unsubstantial, as they usually figure tissues and organs from domestic and laboratory animals rather than from man. On the other hand, in Germany at the end of last century, and still more so in the U.S.A. of recent years, comparative histology has attracted the attention of many zoologists. This has largely been responsible for the fact that experimental embryology blossomed in Germany and is now bearing fruit in North America.

Undoubtedly that great French genius Bichat (1771–1802) founded the subject of general anatomy or histology by concentrating on tissues rather than organs, with a hand lens rather than a microscope. The cell theory of the structure of tissues, both animal and vegetable, was founded by Schwann and Schleiden in 1838. Histology bore the name "general anatomy" for some years. Fr. Gerber, of Berne, wrote his textbook of general anatomy in 1840. This was translated by George Gulliver in 1841 with considerable additions. Gerber is worth remembering if only for the statement, "Anatomy and physiology, however, ought never to be regarded as separate sciences, altogether disjoined and different; they are indeed, so closely linked together, that they are all but one and the same; in anatomy, we study the organs in *repose*, in physiology, we study them in *action*." As an example of early teamwork Dr. Gulliver registers his thanks for the engravings to "Mr. Siddall, a zealous micrographer and the worthy veterinary surgeon to the Blues," and to "Dr. Boyd, the excellent resident physician of the St. Marylebone Infirmary, for his friendly assistance on various occasions."

In 1837 William Sharpey was appointed to the chair of anatomy and physiology at University College, London, at the time when Richard Quain (1800–87) held the chair of practical anatomy and served as surgeon to the hospital. Sharpey, with tremendous energy, established a course in microscopic anatomy. The large round table was fitted with a lamp at the centre and a brass rail near the edge, along which the microscope circulated from one student to the other. Sharpey instituted a lectureship in practical physiology "with a view to supplying medical students with instructions in the use of the microscope in examining the texture and fluids of the body." Sharpey, having become professor of physiology, took over the teaching of histology and neurology, so that the department of anatomy was left with no equipment beyond the cadaver, and sank to be the handmaid of surgery.

William Sharpey and Richard Quain published the fifth edition of Jones Quain's *Anatomy* in 1848 with the assistance of Potter, Viner Ellis, and John Marshall. This edition had a new section on general anatomy and also one on surgical anatomy.

The first distinct work in English on general anatomy was that of Dr. Craigie, of Edinburgh (1828). The second was that of Mr. R. D. Grainger, of St. Thomas's Hospital (1829), followed almost immediately by Robert Knox's translation of the textbook of Béclard (1785–1825), which passed through successive editions to 1895. Knox also wrote anonymously one of the earliest books on prostitution, "the greatest of social evils," translated Cloquet's *Descriptive Anatomy*, and wrote on *The Races of Man*. It is sad that this great anatomist is remembered scandalously only as a resurrectionist.

That strange man A. H. Hassall, who not only described the corpuscles of the thymus but wrote the *History of the British Freshwater Algae*, published his two volumes (text and atlas) on the *Microscopic Anatomy of the Human Body* in 1846–9. From the point of accuracy of delineation the lectures on histology delivered by John Quekett at the Royal College of Surgeons in 1851–2, and published in two volumes in 1852, show an improvement on Hassall's work and covered both vertebrate and invertebrate forms, so that the study was comparative in the broad sense. This was followed by the masterly works of Kölliker, who published his compendium,

Mikroskopische Anatomie, in 1850–4 and his shorter *Handbuch der Gewebelehre des Menschen* in 1852. The latter was translated by George Busk and Thomas Huxley and published for the Sydenham Society in 1853. Another translation, by Dr. George Buchanan, of Glasgow, was published in 1860.

There is some doubt when the term histology came to replace the older terms general anatomy and microscopic anatomy. H. D. Rolleston, in his history of the Cambridge Medical School, attributes the origin of the word histology to Michael Foster (1836–1907), who deserted the chair of practical physiology at University College, London, to become Prae-elector of Physiology at Trinity College, Cambridge, in 1870. Rolleston says: "In addition to creating the Cambridge School of Physiology and making physiology an aspect of biology, instead of the younger sister of anatomy, he set the example of practical classes in physiology; the work in these classes included histology, a word introduced by Foster in consultation with F. B. Westcott (1825–1901), Regius Professor of Divinity"—and later the most liberal Bishop of Durham. This statement is obviously wrong, since as early as 1853 Theodor von Hessling published a paper entitled "Histologische Mittheilungen" in Vol. 5 of *Zeitschrift für Wissenschaftliche Zoologie*, and in 1859 Arthur Farre, professor in medical obstetrics at King's College, refers to "histological changes" in the uterus after labour (Todd and Bowman's *Cyclopaedia, Supplement*, 1859). Whereas Hassall spoke of microscopic anatomy in 1849, Quekett spoke of histology in 1851, as did W. B. Carpenter in his book *The Microscope* in 1856. Who really established the usage of the term histology?

The word histology, as distinct from general anatomy or microscopic anatomy, seems to have been introduced by A. F. J. K. Mayer in his book, *Ueber Histologie und eine neue Eintheilung der Gewebe des Menschlichen Körpers bei Gelegenheit der Eröffnung seiner Vorlesungen über Anatomie*, an octavo volume of 40 pages published in Bonn by A. Marcus in 1819. This book is not in the University Library at Cambridge or in the British Museum. It is to be hoped that a copy may be unearthed somewhere amidst that dust which is the bloom of age.

The greatest of all textbooks is still the *Manual of Human and Comparative Histology*, edited by S. Stricker (1869) and published post-haste in an English translation by Henry Power, ophthalmic surgeon to St. George's Hospital, in 1870. The three volumes may still be bought for a song, like so many other historic publications of the New Sydenham Society. The contributors to Stricker's *Manual* included such men as J. Arnold, S. Brücke, Cohnheim, Eberth, Engelmann, Gerlach, Klein, W. Kühne, Ludwig, Meynert, W. Müller, Obersteiner, Pflüger, Preyer, Recklinghausen, Rudinger, Max Schultze, Schwalbe, Schweiger-Seidel, Toldt, Waldeyer, and others. The book is a joy because of the conflicting views of the contributors, the different methods of approach to the subject, and the rich historical background. As Stricker said, "Controversy is the mother of inquiry."

The most exhaustive textbook of comparative histology at present is the *Lehrbuch der vergleichenden Anatomie der Wirbeltiere*, by Albert Oppel and his contributors. Eight volumes appeared over the years 1896–1914.

The third edition of Professor Kendall's book, the *Microscopic Anatomy of Vertebrates*,* which provoked this brief historical review of general anatomy and histology, is a sound attempt to present the students of zoology with an interest in the wider fields of the lowlier vertebrates as well as mammals. His chapter on the integument deals with the skin of dogfish, bony fish, frog, reptiles, and birds as well as mammals. The excretory system of pronephros, mesonephros, and metanephros is pictured in the hagfish, the frog, and the mammal. In the skeletal system the terminology is not clear, as such terms as "precartilage," "chondroid issue," and "pseudo-cartilage" are used. The weakest part of the book is the section dealing with the female reproductive system, a field in which most of our knowledge is due to American workers such as Edgar Allen, Leo Loeb, Stockard, H. M. Evans, and the various contributors to the *Carnegie Contributions to Embryology*. It is confusing to talk of the tunica albuginea of the ovary rather than of the tunica propria, for the former term really belongs to the inelastic coat of the testis. As Astley Cooper pointed out so long ago, this inelastic tunic of the testis has much in common with the dura mater, in that haemorrhage into either testis or brain inevitably leads to destruction of tissue. The placenta, that organ which, like the ideal University of Comenius, supplies sap, vitality, and strength to all, deserves a little more space if only because of its importance in classification of the mammals. The decidual cells are said to develop after the onset of pregnancy, whereas they really develop in every premenstrual phase as well and are heavily stored with pabulum for the nourishment of a fertilized ovum which may never arrive. Nature does not ration essential amino-acids, fats, lipoids, or glycogen. She lays a feast, and is prepared to discard it *in toto* in the menstruum.

It is a useful book for any zoology department, and would be better for the inclusion of a brief historical introduction so that the student might appreciate the part played by the original founders of the subject. The book is on the whole well illustrated, but a few of the diagrams are not up to the level of the photomicrographs. The high-water mark of histological diagrams is found in the woodcuts of Todd and Bowman's *Cyclopaedia of Anatomy and Physiology* (1835–59) and their *Physiological Anatomy and Physiology of Man* (1845).

H. A. HARRIS.

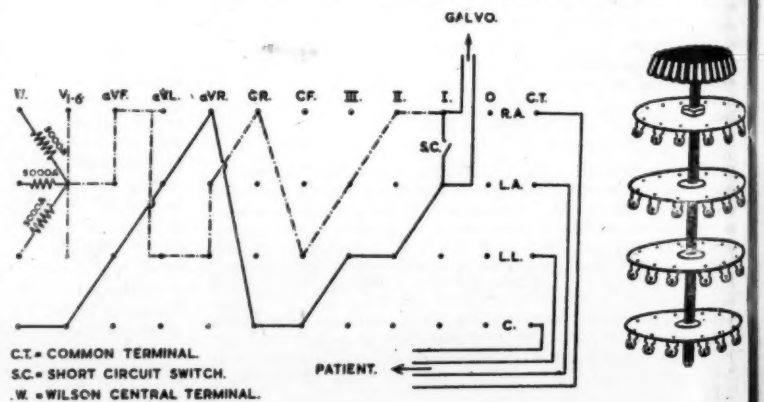
Microscopic Anatomy of Vertebrates. By James I. Kendall, Ph.D., D.Sc. Third edition, thoroughly revised. (Pp. 354; 225 illustrations £1 10s.) London: Henry Kimpton.

Preparations and Appliances

A SWITCH AND WIRING CIRCUIT FOR UNIPOLAR LEAD ELECTROCARDIOGRAPHY

Mr. A. G. BARRITT, electrocardiographic technician, Royal Infirmary, Sheffield, writes: The use of unipolar lead electrocardiography in the diagnosis of cardiac disorders is rapidly becoming recognized as a standard procedure. Its adoption in this country has been hindered by the difficulty in obtaining suitable apparatus. It is laborious and time-consuming when carried out on a standard electrocardiograph. Records are simple to obtain with the Sanborn Viso-Cardiette, but it is doubtful if the instrument is robust enough for heavy routine work. It was felt, therefore, that it would be advantageous to convert a full-size standard type of Cambridge electrocardiograph so that unipolar leads could be taken rapidly and easily.

An electrical circuit has been constructed in which the substitution of a rotating lead-change switch for the existing one in the Cambridge electrocardiograph has made it possible for standard, unipolar extremity, bipolar, and unipolar precordial



leads to be taken with ease. There is thus no need to interchange the leads, the only adjustment necessary being the alteration of position of the chest electrode.

The circuit has been devised by utilizing a 4-pole, 11-way radio switch, which is cheap and easily obtainable. The accompanying schematic diagram outlines the method of wiring.

A four-lead cable runs from the patient's couch to the electrocardiograph, and the R.A., L.A., L.L., and chest leads are attached in this order to the common terminals of each pole. Starting at position I, a pair of wires leading from the galvanometer circuit is connected round the switch as illustrated. A single-pole short-circuiting switch is incorporated in the circuit to allow the electrocardiograph to be tested without a patient in the circuit. Provision is made for the inclusion, if required, of three 5,000-ohm resistances in the unipolar lead circuits, so that Wilson or Goldberger augmented leads may be taken as desired. No provision has been made for taking lead C.L., as various authorities have stated it to be unreliable.

An additional stop has been placed in the film-lowering mechanism on the camera so that only half the film is exposed on each occasion, giving a shorter record of each lead. Instead, therefore, of having only three leads on a film, it is possible to record up to six leads. It has often been convenient to record leads I–III with precordial leads on one film. Alternatively, when unipolar leads are being taken leads I–III, aVR, aVL, and aVF are recorded on one film and leads V_{1-6} on a second film.

Some types of valve-amplifier electrocardiograph, such as the Sanborn Cardiette, are fitted with an interference suppressor that is automatically switched to the lead which is out of the patient's circuit. This may be provided for by connecting the L.L. lead from the machine to the L.A. lead and then connecting this junction to the terminal I (L.A.) above. The electrocardiograph is then used with its switch in the lead I position, and all alterations are made on the rotating switch.

The apparatus has proved very suitable for routine electrocardiography, and the saving in time and effort expended on each examination has been considerable.

This adaptation was carried out in the electrocardiography Department of the Sheffield Royal Infirmary under the direction of Professor E. J. Wayne. I am indebted to him and Dr. A. G. Macgregor for their help and encouragement.

[Since writing this description I learn that a device incorporating a similar switch for use in unipolar lead electrocardiography was demonstrated at the autumn meeting of the British Cardiac Society by Dr. V. Edmunds, of the cardiac department of the Charing Cross Hospital.]

Under new regulations the maternity grant of £4 can now be claimed at any time within eleven weeks before (instead of seven weeks before) the expected week of confinement and three months after the confinement. The attendance allowance of £1 a week for four weeks after confinement can now be claimed at any time between the eleventh week before the expected date of confinement and the fourth week afterwards. Previously the allowance could be claimed only within ten days after the birth. If the allowance is claimed in advance it must be accompanied by a certificate of expected confinement, and the same claim form will do for the attendance allowance and maternity grant. The attendance allowance, unlike the maternity grant, cannot be paid in advance or until a certificate of confinement is received. The time limit for putting in this certificate is 28 days after confinement. The maternity allowance—a special benefit in place of attendance allowance for mothers who usually work for employers or in their own business—can now be claimed between the eleventh and sixth weeks before the expected confinement instead of only between the seventh and sixth weeks. This allowance of 36s. a week begins six weeks before confinement and continues for thirteen weeks provided the mother gives up work for this period. If the claim is late and good cause cannot be shown for the delay the allowance may be reduced or withheld. The certificate of expected confinement should be completed by the doctor or midwife; as the examination on which this is based can now be carried out at any time between the eleventh and sixth weeks before confinement instead of only during the seventh week before, the certificate can be obtained after a routine antenatal examination and should not require a special visit. The time for notifying the date of confinement on the certificate enclosed in the order book has now been extended from 21 days to 28 days after confinement. The regulations have been made provisionally, pending the report on them by the National Insurance Advisory Committee. The committee will consider objections to them sent before May 10 to the Secretary, National Insurance Advisory Committee, 6, Curzon Street, London, W.1.

IMPERIAL CANCER RESEARCH FUND

ANNUAL REPORT

The annual general meeting of the Governors of the Imperial Cancer Research Fund was held on April 20, when the Earl of Halifax was re-elected President of the Fund. Dr. W. E. Gye, who is retiring on Aug. 11, will be succeeded as general superintendent of investigations and director of the central laboratory by Dr. James Craigie.

Much of the forty-sixth annual report of the Fund is devoted to the work which was undertaken by the present director, his successor, and Dr. A. M. Begg and Miss Ida Mann on the propagation of mouse tumours by means of dried tissue. This work was the subject of an article by Dr. W. E. Gye which appeared in our opening pages in the *Journal* of March 26 (p. 511).

The report mentions the continuing investigation of mammary tumours in hybrid mice by Dr. L. Foulds; studies of the carcinogenic action of azo-compounds by Mr. H. G. Crabtree; and work by Mr. P. C. Williams on endocrinology. Dr. C. C. Spicer has completed an investigation into the incidence of lung cancer in some London teaching hospitals. The last investigation of this kind made in England by Passey and Holmes and by Bonser showed that the great increase in lung cancer recorded by the Registrar-General was not paralleled by the incidence of the disease in teaching hospitals, where the possibilities of errors in diagnosis are presumed to be reduced. Over the 20 years that have elapsed since Passey and Holmes published their findings the increase in the incidence of lung cancer recorded by the Registrar-General has continued. Dr. Spicer's investigation, which is now being prepared for publication, suggests that there has also been an increase in the incidence of lung cancer in London teaching hospitals.

CLASSIFICATION OF DISEASE

SIXTH REVISION OF THE INTERNATIONAL LIST

The first of the two volumes of the new *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death*[1] was published this week. The work of preparing this new list was fully described a few months ago in a leading article in the *Journal* (Sept. 4, 1948, p. 480). The first International List of Causes of Death was compiled towards the end of the last century and was revised at ten-yearly intervals. The present manual represents not merely the sixth revision of the old International List: it now provides a single list which is applicable to morbidity as well as to mortality statistics. This new classification, together with international regulations about its use, was adopted at the First Assembly of the World Health Organization in August, 1948.

The manual contains an introductory historical review and a description of the methods by which the classification has been worked out. The purpose of a statistical classification is to provide a list of disabilities for compiling statistics and not a nomenclature of diseases and injuries. In the words of the introduction:

> "Not every condition receives a particular number, but there is a category to which every condition can be referred, and this has been achieved by the method of selective grouping. For instance, a broad group of conditions such as the psychoses is given a two-figure number and is then divided into nine categories corresponding to fairly well defined types of psychoses, and lastly there is a tenth or residual category to which the psychoses which are not already characterized or are ill-defined can be allocated. The principles of determining what conditions should be specified as definite categories are based on frequency, importance, and clarity of characterization of the condition."

The detailed list consists of 612 categories of diseases and morbid conditions, plus 153 categories for classification of the external cause of injury and 189 categories for characterization of injuries according to the nature of the lesion. A decimal system of numbering has been adopted in which the detailed categories of the classification are designated by three-digit

[1] H.M.S.O., 1949, London. Published by arrangement with the World Health Organization, Geneva. Price for the two volumes, 30s. net.

numbers. In many instances the first two digits designate important broad groupings. The third digit divides each group into categories which represent specific disease entities or a classification of the disease according to some characteristic, such as anatomical site. This first volume also contains (1) a tabular list of diagnostic terms included within each category (many of the three-digit categories are here subdivided into four-digit categories); (2) three special lists for tabulation of morbidity and mortality data; (3) a section on medical certification and rules for classification provided to assist the compiler of medical statistics; (4) a suggested form of multiple-cause tabulation; and (5) the text of the regulations adopted by the World Health Organization which will govern the use of the classification and the presentation of official statistics from Jan. 1, 1950. The second volume, which is now in the press, will be an alphabetical index of terms and the code number assigned to them.

In the preface to the manual it is stated that the World Health Organization is offering it in the expectation that "it will be not merely an object of interest to medical statisticians, but the instrument for collecting information into a common pool of knowledge from which in time all mankind will benefit." The Registrar-General has expressed the hope that on its publication in this country it will have the widest use among the medical profession, hospital officers, and all others interested in medical statistics.

Reports of Societies

RESECTABLE CARCINOMA OF THE STOMACH

In the Section of Surgery of the Royal Society of Medicine on April 6 a discussion was held on "Resectable Carcinoma of the Stomach."

Professor JOHN MORLEY mentioned, in opening, that he had thought it right to hand over cases of carcinoma of the cardiac end of the stomach to those of his colleagues who were accustomed to the transpleural approach. Whether the transthoracic approach to carcinoma of the upper half of the stomach, which had so greatly extended the scope of surgery in this field, was better left to the thoracic surgeon or whether the abdominal surgeon should accustom himself to this route was a matter for serious discussion. The ideal solution, that the two specialists should work together, was hardly feasible in most hospitals, because the harvest was so great and the labourers so few. But it might be agreed that all surgeons who undertook transpleural gastrectomy must be well versed not only in the technique of gastro-intestinal suture but also in the after-care of patients suffering from a thoracotomy wound.

There was in the profession a widespread feeling of pessimism about the end-results of gastrectomy for cancer. This was not altogether justified, and it did tend to hamper their efforts by leading to undesirable delay before the patient was brought to operation. Doctors who believed that all patients suffering from cancer of the stomach were bound to die within two or three years were not likely to send the patient to the surgeon as a matter of urgency.

As for the proportion of cases in which the cancer could be resected, out of Harnett's (British Empire Cancer Campaign) cases from London hospitals resection was undertaken in only 17.3%, but Harnett himself considered that 26% might be considered as the average rate at present. That accorded with Professor Morley's own experience over the last thirty years. Figures from the Mayo Clinic for cases operated on in 1947 showed that of 275 patients 148, or 53.8%, had growths that were resected; these figures were not comparable with Harnett's or his own because they referred only to the cases operated on and not to all cases diagnosed.

Mortality and Results

The operative mortality in his own list of 140 cases of gastrectomy for cancer was 21.4%. This was far too high, judged by present standards, but these cases included a large proportion operated on in the dark ages of gastric surgery, before much account was taken of such things as the state of the patient's blood, the serum-protein, etc., and before the "sulpha" drugs and penicillin had robbed chest complications of their terrors. He had always felt that where there was a remote chance of radical cure the patient should be given the benefit of surgery without too tender a regard for one's own statistics. In a series of cases at the Manchester Royal Infirmary from 1940 to 1948 the mortality from gastrectomy was 19.7%. It was worth noting that the mortality rate for the palliative operations was very much the same as for the radical operation—a clear enough indication of the poor material these patients presented. Of those of his patients who survived operation, just over one-half died within three years. Once the patient had got through the first three years the chance of permanent cure was not inconsiderable.

Of the 110 survivors of the operation among his 140 cases, 64 died within three years, but one died after twenty-one and a half years without any recurrence, and the cause of death was coronary thrombosis. Two were alive and well after twenty-one years, two after twenty years, and one after eleven years. Of the late recurrences one was eight years after operation; three were four years after operation. With cancer of the stomach there was not the same remarkable tendency to late recurrence as in cancer of the breast, where local recurrences were not at all uncommon after ten, fifteen, twenty, or even twenty-five years. The main problem in these cases of cancer of the stomach, Professor Morley continued, was to refer them to the surgeon early, though it must be admitted that in the early stages clinical diagnosis amounted to nothing more than a shrewd guess, and they were entirely dependent on radiological findings, fortified on occasion by gastroscopic studies.

Hypertrophic stenosis of the pyloric canal in adults Professor Morley mentioned as closely simulating early cancer of the stomach. Some of these pyloric stenoses were associated with ulcer, some with no other lesion, and in these cases it was difficult to account for its aetiology. The condition might disappear spontaneously. In one of his cases diagnosed radiologically in 1934 in a woman who had complained of indigestion for fifteen years previously there was the typical radiological appearance of hypertrophic pyloric stenosis. He operated on her nine years afterwards and found a chronic ulcer on the lesser curvature, but by that time there was no sign whatever of the hypertrophic pyloric stenosis.

The type of gastrectomy for cancer which he had found most satisfactory was a modification of the Billroth I operation usually associated with the name of Schoemaker, who devised it. He thought that after this operation there was less tendency for post-gastrectomy anaemia to appear. For cancers of the cardiac end of the stomach, transthoracic gastrectomy was the method of choice. Many of these operations would be total gastrectomies, but in his view the real hope of controlling this condition lay not in ever more extensive operations but in diagnosing the condition so early that as far as the more favourable pyloric growths were concerned a subtotal gastrectomy would be effective. Some surgeons had suggested that total gastrectomy ought nowadays to be preferred to subtotal gastrectomy even for neoplasms in the pyloric half of the stomach. He thought that was wrong. Total gastrectomy would mean a greatly increased operative mortality, without much prospect, if any, of a compensating increase in the number of permanent cures. Ultimately, in the back of their minds at any rate, they might cherish the hope that the biochemists would find a remedy which would make the surgeon's efforts in this field no longer necessary.

Truly Radical Resection

Mr. N. C. TANNER agreed with Professor Morley that a pessimistic attitude was wrong. Radical resection of the tumour, even if death took place within five years, as it did in the majority of cases, relieved pain, vomiting, and anaemia, and restored the patient to his home and usually to his work. In view of the age at which gastric carcinoma usually appeared, a year or two of this relief represented a valuable addition to the patient's life. Diagnosis was little or no better than it was ten years ago, but the operative mortality had diminished for operations on all parts of the stomach, so that with the much higher number of resections and the higher proportion of survivals an increase in the number of patients surviving for five years or more could be predicted.

Although total gastrectomy by the abdominal route had been successfully carried out for many years, there was no doubt that, except in a few cases with lax viscera, it was technically difficult, and the end-result was often an insecure anastomosis. For truly radical resection it might be desirable to remove some part of the lower oesophagus, which was often difficult or even impossible by the abdominal route. The more liberal oesophageal resection had almost eliminated that unfortunate group of cases in which recurrence took place on the suture line. Of late years there had been a great widening of the limits of resection; upward and downward extensions to the oesophagus and the duodenum had taken place, but after these massive resections the patients as a rule remained in good condition.

Professor F. A. R. STAMMERS said that the chief hope lay in early diagnosis in these cases of gastric cancer. When a person of 50 developed some dyspepsia unexplained by *x* rays or gastroscopy laparotomy should be undertaken to make certain that the opportunity of eradicating a growth was not being missed. Most patients died of secondaries in the liver or wider metastasis, but a few died of recurrence in the stomach itself. In a small group of cases in Birmingham, in 12 subtotal gastrectomies there had been one post-operative death, and in 7 total gastrectomies two operative deaths. The decision as between total and subtotal gastrectomy was best left to the surgeon at the time of exploration. Of post-operative features he mentioned regurgitation, especially when the operation went a little above the diaphragm. This often led to glossitis, which, however, responded to the exhibition of vitamin B. This regurgitation was most marked after total gastrectomy. Another post-operative effect was a feeling of fullness after meals.

Mr. R. C. B. LEDLIE showed a film illustrating the operation which he carried out at the Royal Cancer Hospital, and summarized a series of cases which had been under his care. Unfortunately, owing to a technical hitch, Mr. Ledlie's interesting film was not well shown.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM

ANNUAL CONGRESS

The annual congress of the Ophthalmological Society of the United Kingdom was held at the Royal Society of Medicine from March 31 to April 2. Mr. FRANK A. JULER, who presided, welcomed the visitors from other countries, and announced that a medal would be presented to future Bowman lecturers and that meanwhile one of these tokens was now available for each of the former lecturers. Sir JOHN PARSONS, F.R.S., who was the Bowman lecturer in 1924, thereupon received his medal from the president. So also did Professor H. J. M. WEVE (1939) and Professor MARC AMSLER, last year's Bowman lecturer. Arrangements were made to send medals to the other surviving lecturers: Sir ARTHUR KEITH (1930), Professor VAN DEN HOEVE (1932), and Dr. ARNOLD KNAPP (1946).

Scientific Papers

The presidential address embraced two subjects of wide clinical significance: "Some Points in the Operation for Acute Glaucoma" and "Some Reflections on Refraction." Mr. Juler emphasized the enduring value of von Graefe's work on glaucoma and stressed the dangers which might arise from operative wounding of the corneal endothelium. He put in a plea for prompt surgical treatment in cases not responding to miotics and other medical remedies. On the subject of refraction, certain fallacies in connexion with retinoscopy were mentioned, and the need for accuracy, especially in working with children, was discussed. The president also reviewed the special problems of presbyopia and anisometropia. In considering oblique astigmatism he dwelt on the possibility of exploiting the work of Bielschowsky and others on ocular torsion consequent upon tilting of the head towards either shoulder.

A lucid and well-illustrated survey of the technique of plastic operations in the neighbourhood of the orbit was contributed by Mr. D. N. MATTHEWS. He demonstrated some of his results in cases of congenital ptosis treated by a modification of Blaskowicz's operation, and described his method of treating epicanthus. Other subjects touched on were the reconstruction of damaged eyelids and tear-ducts and the plastic repair of a socket.

Dr. S. P. MEADOWS described the symptoms and signs arising from internal carotid artery aneurysms. Two other neuro-ophthalmological contributions were read by Dr. MACDONALD CRITCHLEY. In discussing the problem of awareness or non-awareness of visual field defects he emphasized the importance of associated disturbances in cerebral function whereby large gaps in the visual field might be masked. In ordinary clinical practice patients complaining of metamorphopsia were usually found to be suffering from macular lesions, but Dr. Critchley's second paper served as a reminder that changes in the apparent shape of objects could be caused by intracranial disorder. Toxic, traumatic, vascular, and neoplastic disturbances of the occipital cortex could all produce metamorphopsia, to say nothing of elaborate hallucinations.

Dr. E. HARTMANN, of the Hôpital Lariboisière, Paris, spoke on the clinical estimation of pressure in the retinal arteries. He admitted that Baillart's ophthalmodynamometer was not entirely accurate, but pointed out that few clinical methods were foolproof. If the observer learnt the technique of application and realized its limitations, then Baillart's instrument would serve as a guide to the comparative pressure in the retinal arteries of different subjects or of the same subject at different times.

The reduction of intra-ocular tension by curare, retrobulbar procaine, and di-isopropyl fluorophosphate was the subject of a review by Mr. J. R. WHEELER. Mr. EUGENE WOLFF showed some excellent histological pictures to illustrate his notes on normal and pathological ocular pigment. Mr. W. J. WELLWOOD FERGUSON and Dr. ALASTAIR G. MACGREGOR spoke about congenital total colour-blindness, with otosclerosis and hypertension as associated hereditary abnormalities. They described four cases and discussed the genetical significance of this syndrome.

Dr. A. C. COPPER (Leiden) read a paper on the measurement of the retrobulbar resistance. He discussed the concept of orbital tension, explained how the results of orbitonometry could be set out in graphic form, and stressed the value of the orbitonometer in distinguishing between inflammatory and neoplastic proptosis.

Dr. G. KARPA (Stockholm) described his work on clinical electroretinography, and indicated its practical importance in diagnosis and prognosis. Some problems in ophthalmic dispensing were discussed by Mr. J. PIKE from the standpoint of a dispensing optician. Dr. J. BERKSON read a paper dealing with the clinical significance of retinal arteriolar spasm in the toxaemias of pregnancy.

Corneal Grafting

Intensive work on corneal grafting has been facilitated in many countries by permission to obtain donor material from the fresh cadaver. Those who attended the discussion on this subject were fortunate in being able to hear the experiences of so many recognized authorities. Professor A. FRANCESCHETTI (Geneva) gave a brief historical review of corneal grafting, and pointed out that equally good results might be obtained from techniques exhibiting many differences in detail, so long as the operator worked with discrimination. They were now in a position to give a more accurate prognosis than had been possible formerly. It was generally realized now that aphakic cases and those with traumatic leucoma were not good subjects for grafting. Some of the best results, on the other hand, had been obtained in cases of corneal dystrophy, although Fuchs's endothelial dystrophy was in this respect an unfavourable exception.

Details of operative technique were discussed by Mr. J. W. TUDOR THOMAS, who said that in his experience the chances of a successful graft were enhanced by the presence of opaque cornea at the site of implantation. He also pointed out the danger of trying at the time of operation to remove the membrane which is so frequently found behind the cornea in cases of old iridocyclitis. Professor G.-P. SOURDILLE (Nantes) discussed the influence of associated ocular and palpebral lesions upon the outcome of corneal grafting, and made special reference to the adverse effect of aphakia and of a large symblepharon. Dr. L. PAUFIQUE (Lyons), who was part author with Professor G.-P. Sourdille and Dr. G. Offret of the 1948 report

of the Société Française d'Ophtalmologie on corneal grafts, showed a film of a peripheral lamellar graft to demonstrate his technique. Such grafts might directly improve the vision in cases of superficial scarring, or prepare the way for a subsequent whole-thickness graft, or exert a therapeutic effect upon certain disorders of the cornea—especially neurotropic lesions.

Other films of operative technique were shown by Dr. J. I. BARRAQUER (Barcelona), Dr. A. FRITZ (Brussels), and Mr. B. W. RYCROFT. Mr. D. P. CHOYCE described the work which he is doing at the Institute of Ophthalmology on superficial lamellar keratoplasty in rabbits. Dr. R. CASTROVIEJO (New York) showed colour photographs of his operative results after whole-thickness grafting. The possibility of encouraging a graft by the administration of vitamins and amino-acids was mentioned by Professor G. B. BIETTI (Pavia), who also gave an account of his technique and operative results.

THE LIPOIDOSES

At a joint meeting of the Liverpool Medical Institution and the Manchester Medical Society on March 2 Professor Sir HENRY COHEN delivered an address on the lipoidoses.

He said that interest in the lipoidoses began nearly a century ago with the description by Addison and Gull of the lesion now labelled xanthoma multiplex. Several diseases were subsequently regarded as lipoidoses, their common feature being the "foamy" cell. Increasing knowledge of lipoid metabolism and more intensive histological study had helped towards a clearer understanding of these conditions, which though superficially diverse had been shown to be different facets of a uniform process. Excluding neutral fats, the lipoidoses revealed disturbances in the metabolism of (i) *phosphatides*, of which the monoaminophosphatides, lecithin and cephalin, and the diaminophosphatide, sphingomyelin, were of major importance; (ii) *cerebrosides*, among which kerasin was significant; and (iii) *cholesterol*, which played an important part in sex hormone disturbances and in connexion with bile and vitamin D.

In disease excess of lipoid might appear in the intercellular spaces or within the cell. Extracellular lipoid deposits were seen in such degenerative changes as lipoid proteinosis and necrobiosis lipoidica diabeticorum. Accumulation of lipoid within the cell could arise from hyperlipaemia, the excess lipoid being taken up by cells of the reticulo-endothelial system; from abnormal cellular metabolism leading to excessive production of lipoid within the cell; or from both factors. It seemed that in disease one of the lipoids was primarily involved and that the others were affected in lesser degree. Thus phosphatide metabolism was disturbed in Niemann-Pick disease and Tay-Sachs's disease; in Gaucher's disease, kerasin appeared the predominant cellular lipoid.

Xanthomatoses

The xanthomatoses associated with disturbances of cholesterol metabolism fell into three groups. The first appeared to be the direct outcome of a hyperlipaemia, and disappeared when its cause was removed; this group included familial types and those associated with diabetes mellitus, hepatic inadequacy, glycogen storage disease, lipoid nephroses of all types, and myxoedema. In this group extensive and diffuse cutaneous xanthomatosis of the neck, back, palms, and soles was often found. The second group comprised xanthoma palpebrarum, xanthoma tuberosum et planum, xanthoma tendinosum, xanthoma of blood vessels and endocardium (often responsible for familial and hereditary forms of coronary occlusion), and xanthomatous biliary cirrhosis. These, though associated with hypercholesterolaemia, showed evidence of intrinsic cellular dysfunction; they were not separate diseases and all the types might be found in the same patient. In these cases there was no significant reversal of the changes on withholding lipoids. In the third group were included xanthoma disseminatum, Hand-Schüller-Christian syndrome, and eosinophilic granuloma of bone; in these the blood cholesterol was normal. The pathological changes had a common pattern; all variations and gradations of change occurred, depending on the sites of the lesions and whether the predominant cell was the primary histiocyte or its acidophil or "foam" cell modification.

Correspondence

An Unfortunate Precedent

SIR,—In the leading article headed "An Unfortunate Precedent" (April 23, p. 717) you suggest that Fellows of the Royal College of Physicians may hesitate in future to criticize the President lest they be passed over when distinction awards are made. This is regarded by us as an unwarranted insult.

If, as is suggested, the presidents of the Colleges are not to sit on the Awards Committee because they might favour their own Fellows, it is a little difficult to see why you raise no objection to the presence on the committee of the President of the British Medical Association, who presumably might be tempted to hold a brief for those specialists connected with his Association. The three surgeons on the Awards Committee, who represent English surgery, are prominent Fellows of their College. Are they too to resign? The logical issue of your argument is that no one who holds office of any kind or is connected with any university or medical school should serve on the committee, because he is liable to a charge of favouritism. It would be convenient, of course, to those who have been hostile to the Awards Committee from the outset if its authority were undermined in this way, for it would hardly command the confidence of the profession and of the public if no one who was anyone was a member.

It was Lord Moran who proposed in the House of Lords that there should be a Spens Committee on the remuneration of specialists, and, as you yourself admit, "he has by his skill in negotiation rendered the profession notable service." Though he would be the first to admit how much he owed to the sympathetic attitude of the Minister of Health, his efforts have been rewarded by terms of service which are considered by most consultants and specialists to be just and even generous. Of these terms the awards are an essential part. It is easy, of course, before the committee has got to work, to excite suspicion that it will not be in possession of the necessary information and that it will not be impartial. But when a responsible medical journal fosters that mistrust we believe it is doing a grave disservice to consultants and specialists.

We are convinced that the Awards Committee will eventually disarm any opposition there may be to what is, after all, a novel idea by its care in sifting evidence and by its desire to be just to every section of specialists.

It is surely unfortunate that, at a time when the presidents of the Colleges have been trying to help to get more favourable terms for general practitioners, particularly in the matter of betterment, there should be attacks of this kind which threaten unity.—We are, etc.,

DONALD HUNTER,
J. CRIGHTON BRAMWELL,
J. FOREST SMITH,
R. V. CHRISTIE,
Censors.

W. G. BARNARD,
Treasurer.
H. E. A. BOLDERO,
Registrar.
W. D. W. BROOKS,
Assistant Registrar.
ARCHIBALD GILPIN,
Harveian Librarian.

Royal College of Physicians, London, S.W.1.

SIR,—You are not alone in feeling some disquiet at the appointment of the President of the Royal College of Physicians as chairman of the Committee for Distinction Awards to Specialists. Many young specialists, especially physicians, who incidentally, if they are members of the College, have no voice in the election of their president, must feel that a cloud no bigger than a man's hand has risen on their professional horizon.

That no one questions for an instant the integrity of Lord Moran, that his services to the profession command respect if not always approval, are matters beside the point; the fact is that from now on a young man with an eye to his future will have to think twice before he criticizes, however legitimately, any matter within the province of the President of the Royal College of Physicians, and even the mildest terms of approval, not normally to be reckoned as the "base coin of adulation," must be suspect in the eyes of his own contemporaries and competitors.

There is no reason to believe that Lord Moran wishes to make himself immune not only from the criticism of the

ambitious but also from the praise and openly expressed admiration of the self-respecting. Therefore it is to be hoped that he will reconsider his acceptance of this chairmanship, which may not only undermine the high esteem in which he is held both by his own contemporaries and by many younger specialists but also—and perhaps this is more serious—prove a heavy blow to the integrity and independence of the great College of which he has the honour to be president.

Finally, Sir, under the circumstances I beg to be allowed to sign myself,

YOUNG SPECIALIST.

Second Thoughts on Proguanil

SIR,—Owing to the fact that the *Journals* of Jan. 15 and 29 have only just reached me, having had to be returned to England from my station in Nigeria, the article on proguanil by Sir Gordon Covell, Dr. W. D. Nicol, and Messrs. P. G. Shute and M. Maryon (Jan. 15, p. 88), your leading article (p. 106), and Sir Gordon Covell's letter (Jan. 29, p. 192) have only now come to my notice. I have had considerable clinical experience of the prophylactic use of proguanil, as well as its therapeutic use in the treatment of subtertian malaria, during my last tour of eighteen months on the plateau in Nigeria.

I think that you were perfectly correct in stressing in your leading article the question of lack of appetite, etc., caused by the drug as a matter of moment. In my experience a complaint of lassitude, lack of appetite, and, quite often, looseness of stool is common in Europeans taking a 100-mg. dose of proguanil daily prophylactically. Examination of these cases, including blood and stool examination, revealed nothing except, in rare cases, an occasional *Plasmodium falciparum* parasite. I diagnosed them as "low fever" and prescribed mepacrine, 100 mg. thrice daily for five days or more. The effect of this was spectacular, and about the fourth day the symptoms had cleared up so much that in several cases I was asked if mepacrine was a "tonic." It was interesting that in most cases the symptoms did not appear until the patient had been taking proguanil for at least two or three months, so it is to be presumed that the effect of the drug is cumulative. Or are the symptoms due to malaria breaking through the prophylactic?

In the clinical treatment of malaria I was very much disappointed with the results when using proguanil alone, and finally gave up its use as a sole cure when one patient showed ring forms of the subtertian parasite after 800 mg. of the drug on the three previous days (that is, two tablets four times daily). It was obvious from a clinical point of view that there was a time lag in the disappearance of clinical symptoms. This is a serious defect, especially in cases where cerebral symptoms are present.

The cases in which vomiting is a symptom of acute malaria are very common, and my records show that over 50% of Europeans met with have this symptom. In many cases the vomiting is not severe, and a little sedative premedication allows the oral administration of the antimalarial drug. In probably about 10% of cases the parenteral administration of a remedy becomes necessary, either because of vomiting or because of the need to obtain immediate action of the drug owing to the presence of cerebral symptoms. In these cases quinine or mepacrine has had to be used, as no soluble proguanil was available. I stress this point in order to emphasize that any drug for the treatment of acute subtertian malaria must be available for use either by the intravenous or intramuscular route. In unconscious cerebral cases immediate action by intravenous methods is essential, so up to the present we have been limited to the use of quinine in such cases.

I have seen Dr. John Lowe's letter (April 2, p. 589). I am judging the efficacy of proguanil by its use in controlling and eradicating malaria in Europeans. Nearly all my practice has been among such people since the drug was introduced, but a small supply used in the infant-welfare clinic at Aba early in 1947, during my previous tour, did not impress me with its efficacy. The cases were, however, more allied to the non-immune European, as they had not lived long enough to acquire the immunity that the adult indigenous populations of malarious areas in the Tropics do acquire, so I can say that I have had practically no experience of the treatment of malaria with proguanil in a native population.

I agree with Dr. Lowe that mepacrine is much more toxic than proguanil, but the toxic effects of the latter are not as negligible as he and Sir Gordon Covell suggest. I do not think that your leading article overstated the case, and great care will be required in introducing proguanil on a large scale in the already undernourished populations so often found in malarious areas of the Tropics.—I am, etc.,

Southborough, Kent. GAVIN SHEARER.

Fish Poisoning

SIR,—In response to the annotation on fish poisoning (Feb. 19, p. 317) I am stimulated to record my experience in another Pacific island—namely, Niue or Savage Island. During the early nineteen-thirties, long before there was any possibility of dumped war materials, I would occasionally see practically a whole native village down with fish poisoning. The toxin was presumably neurotoxic, as paralysis of the legs and extreme bradycardia (pulse rate 30–40) were common symptoms. Poisonous fish fed to cats gave rise to paralysis of the hind legs.

Poisoning occurred through the consumption of a fish known to the natives as "meito." The interesting feature was that, although on the "liku" or windward side of the island this variety is never poisonous, yet on the leeward side of the island the fish is poisonous at certain times of the year which were quite unpredictable. The Niueans, although well aware of the danger, were always ready to take the risk, possibly on account of the shortage of protein in their diet. Taking into consideration the geographical and seasonal distribution, I concluded that the fish became poisonous through eating some poisonous marine growth.—I am, etc.,

Dunedin, New Zealand. G. O. L. DEMPSTER.

Hospitality for Overseas Visitors

SIR,—The response to my appeal last year (*Journal*, April 24, 1948, p. 809) for hospitality in doctors' homes for our medical visitors from the Dominions and Colonies was most generous and, in fact, more than covered our needs at that time. The Empire Medical Advisory Bureau is now well established, and a report of its work (*vide* Annual Report of Council, 1948–9, *Supplement*, April 2, p. 199) shows that we are in touch with some hundreds of overseas doctors and families with correspondingly great opportunities of getting to know one another.

Most of our overseas medical visitors are in this country for postgraduate education lasting at least a year and often 2–3 years, and while the more fortunate ones may get about and see the country during vacations many do not, and in any case "sight-seeing" is not getting to know one another in our homes. A week-end in the country or by the sea is a most welcome change to men working hard in unaccustomed grimy cities.

May I appeal again, therefore, through your columns to the generously hospitable instincts of our members to help make our visitors welcome in their visits to "the old country." I shall be very glad if doctors willing to offer hospitality to our overseas visitors for one or two days, or even longer, would write to me stating what they are able to offer.—I am, etc.,

HUGH A. SANDIFORD.

Empire Medical Advisory Bureau, B.M.A House, Tavistock Square, London, W.C.1.

The Deaf-blind

SIR,—In England and Wales there are more than 4,000 deaf-blind persons on the official register. This number may be a matter of surprise to many. These doubly handicapped people present a problem of peculiar difficulty to the local authorities responsible for their welfare. Obviously they need special attention in addition to financial help. Teaching the manual alphabet is one of the services which local authorities, through their home teachers, provide for the deaf-blind.

Last year an appeal for the deaf-blind on the wireless was made by a deaf-blind man, Mr. Arthur Sculthorpe. His voice was normal and his articulation perfect. His letter in reply to an inquiry about how long he had been deaf was of unusual interest, and some of the points in it seem deserving of wider publicity. He is 44 years of age, had perfect hearing up to

the age of 24, and had been "stone-deaf" since he was 27. He writes :

"I was able to live an ordinary life until I lost my sight also ten years ago. I cannot explain why it is that I retain normal speech, unless it is that I have never ceased to use my voice. Most deaf people are forced, by the shunning of them by ordinary people, to seek their company among other deaf people, where the voice is not used, and so there is a lack of that practice which is absolutely essential when the hearing is not there, to keep the voice in proper condition. I never went into the deaf world, but determined that I would have normality or nothing. I have some idea of control of pitch and volume by the feel of my throat. But although I can speak normally, I find I cannot sing. The range has so contracted that I cannot now reach beyond one octave, nor can I control the pitch of a note to hold it . . . I have noticed since I became deaf that I can 'hear' and 'see' a nerve shock. If I have a sudden nerve shock (as when someone taps me when I thought I was alone) I hear a sound like the banging of a heavy door, and I can see a flash of light. This also occurs when dropping off to sleep. 'Noises' are always there, but normally are so much of the background that one does not worry about them. They increase when one is tired or under some special strain."

There is admittedly considerable room for development in this very difficult field of welfare. The need for and importance of voluntary helpers are recognized. Our profession has its share of responsibility in seeing that these unfortunates are placed on the official register so as to be able to obtain the help provided by the authorities, and also in forming a more informed public opinion in this regard so that the voluntary helpers needed may be forthcoming.

Information about ways of assisting these doubly handicapped sufferers can usually be obtained by getting into touch with the home teacher employed by the local authority or by writing to the National Deaf-Blind Helpers League, 40, Green Road, Hall Green, Birmingham, 28.

—We are, etc.,

HERBERT CAIGER.
L. HADEN GUEST.

Smallpox Contacts

SIR,—I had to deal with four smallpox contacts from the s.s. *Mooltan*. Fortunately—with their consent—I was able to keep them under close observation at our isolation hospital.

This is an age of travel, and it seems to me that if certain countries insisted on the protective inoculation of persons leaving their shores the procedure would be of the highest practical importance in preventing variola major from entering this country. This applies particularly to ships calling at Indian ports. I take it this is a matter for the World Health Organization.—I am, etc.,

G. C. F. ROE,
Medical Officer of Health.

Halifax.

Dosage of Heroin

SIR,—Dr. Cranston Walker's memorandum (April 9, p. 619) entitled "Dangerous Symptoms after Injections of Heroin (Diamorphine)" must not be allowed to go unchallenged. It must be pointed out that in Case 1 a dangerous overdose was given. The official dose by injection is 1/24 to 1/8 gr. (3 to 8 mg.), and here in a woman already very ill—"pale and rather limp, pulse rapid and breathing shallow and rapid"—X. Y. Z. gives a dose of ¼ gr. (22 mg.). Now this is equivalent to nearly 1 gr. (65 mg.) of morphine in effect, and the signs and symptoms that followed could only have been expected. In Case 2 a woman obviously unfit and aged 65 is given a dose greater than the pharmacological one, again with alarming results which might have been foreseen.

Heroin is a very potent and very valuable drug, and it would be a great misfortune for it to be brought into disrepute on account of these two cases. Its chief disadvantage, of course, is the liability to bring about addiction because of its pleasant effects, but if this is borne in mind it is the analgesic of choice in many cases.—I am, etc.,

J. H. CRAWFORD.

Hove, Sussex.

SIR,—I was interested to read the memorandum by Dr. Cranston Walker (April 9, p. 619) in which he describes two cases of severe and dangerous respiratory depression produced by heroin. Might I suggest that the cause of the trouble in both cases was overdosage ?

Most authorities nowadays regard heroin as being about four to five times as powerful as morphine. Cushing,[1] for example, states that "a study of the analgesia resulting from the use of the opium group of alkaloids showed that to produce equal degrees of effects heroin in 1.5-mg. doses was as efficient as 8 mg. of morphine." The maximum official dose of heroin, incidentally, is ½ gr. (8 mg.). Is it any wonder, then, that a woman of 40, in a state of exhaustion, should develop alarming symptoms after a dose of ¼ gr. (22 mg.) ?—an equivalent dose of morphine would be 1½ gr. (87 mg.). Dr. Walker mentions that in three or four previous cases X.Y.Z. had injected ⅙ gr. (11 mg.) of heroin with little apparent effect. If this is true, those cases must either have been habituated to the drug or have had an abnormally high metabolic rate. In the second case reported by Dr. Walker a woman aged 65 developed severe respiratory depression after a dose of ¼ gr. of heroin.

I submit that in both these cases it was the dosage which was at fault and not the drug. An important point to remember is that the dose of any of the opium derivatives per pound of body weight is directly proportional to the metabolic rate. Guedel,[2] pointing this out, writes :

"The employment of a routine dose of morphine is folly. With a low metabolic rate (hypothyroidism), morphine ¼ gr. (16 mg.), or even ¼ gr. (11 mg.), may paralyse respiration in an apparently well-developed adult. With a high metabolic rate, morphine ¼ gr. will make but little impression. For example, morphine ¼ gr. (24 mg.) will produce no more effect in a patient with a metabolic rate of 25% above normal than ¼ gr. will produce in normal, or ½ gr. with metabolism 10% below normal."

In this connexion it is worth noting that the metabolic rate of a woman in labour is greatly increased. It is possible, therefore, to give relatively large doses of heroin with safety during labour[3 4] and thus exploit the analgesic properties of the drug to the full.—I am, etc.,

JAMES ROSS.

Garlands, Carlisle.

REFERENCES

1 *Pharmacology and Therapeutics*, 1940, Philadelphia, p. 389.
2 *Inhalation Anaesthesia*, 1937, New York, p. 65.
3 *British Medical Journal*, 1944, 1, 59.
4 Ibid., 1947, 1, 738.

Marriage Neurosis

SIR,—I was very glad to read Dr. R. Macdonald Ladell's condemnation (April 9, p. 635) of the indiscriminate use of E.C.T. and of the equally dreadful operation of leucotomy. It has become apparent to me in practice that there is a great increase in the use of E.C.T. in difficult cases without any previous attempt at psychiatry. Surely the resort to E.C.T. is a confession of failure on the part of the psychiatrist, as it is purely a mechanical operation divorced from all conception of the aims of psychology. I am grateful to Dr. Ladell for calling attention to a practice which must bring discredit to psychiatrists in particular and to the profession in general.—I am, etc.,

J. I. MILNE.

Manchester, 12.

SIR,—It was with considerable pleasure that I read Dr. R. Macdonald Ladell's letter on "marriage neurosis" (April 9, p. 635), and I would like to affirm his contention that E.C.T. in out-patient use is in danger of being used as a short cut to alteration of behaviour which leaves hidden the real distortions of relationship which are the core of a neurosis. His letter is the more timely in that in the psychiatric clinic of the future the temptation to use E.C.T. more and more instead of less and less will be considerable.

E.C.T. is still an empirical treatment. I have been using it as an adjunct to psychotherapy since 1943, and I have come to the conclusion that it has many effects, of which the most noticeable both to psychiatrist and patient is the physical rejuvenating effect, which may be through activation of basal metabolism *per se* or may be an action on the endocrine system via stimulation of the subthalamic structures. In the purely psychic field it seems to have the property of putting a brake on a vicious circle of intolerable anxiety, and it also has a later effect of bringing together the cracking façade of a perfectionistic attitude. It would be a pity if psychiatry took only the narrow view of the first, and perhaps the second, effect and in this lost sight of the disturbed psychodynamics behind the third, and even the second, effect. If the wider outlook

is not taken and enough psychotherapy, simple and direct as it may have to be, not given to inelastic mentalities, what we are doing is no more a "cure" than is the giving of opium to a case of phthisis the curing of consumption.

There is no denying that for some cases E.C.T. is an indicated therapy, but this should never blind us to the fact that the end of therapy for the neuroses is an improvement of human relationships, even though this may mean the offering at the clinic of a stable relationship once a week for a year or more. Marriage is one of the largest of human relationships, and to attempt to assess and deal with the difficulties of one partner without coming to know something of the other, and without a regard to the relationship between them, is like trying to lift a log by one end only.—I am, etc.,

Exeter. L. F. DONNAN.

Tuberculous Meningitis

SIR,—I have been reading with interest the excellent article on tuberculous meningitis by Drs. J. Rubie and A. F. Mohun (Feb. 26, p. 338) and the annotation (p. 357) that remarks, "Perhaps the strongest impression made by this paper is the necessity for early diagnosis and the skill which may be required in reaching it." The authors stated that the commonest interval between the first appearance of signs or symptoms and the day of diagnosis was 8–15 days. We should not be satisfied with these results. We are compelled to admit that streptomycin has brought about a revolution in treatment but not in diagnosis. The revolution to be made in diagnosis consists of not waiting till the diagnosis is sure, but sending the child to hospital without delay where there is the slightest suspicion of tuberculous meningitis. It would be too much to suspect a child in out-patients', at the first examination, of having tuberculous meningitis because he has slight fever or is complaining of headache, constipation, diarrhoea, or anorexia. But when the child is under 4 years of age and the Mantoux reaction is positive, the situation is changed; then irritability, listlessness, fatigue, failure to gain (or loss of) weight might be symptoms of tuberculous meningitis.

The means of reaching the earliest diagnosis of tuberculous meningitis is: (1) To perform the Mantoux reaction on all children who come to examination. (2) To send all Mantoux-positive children for regular supervision in the first year of the infection. (3) The mothers must be taught to bring these children for occasional examination whenever they are unwell.

In a young tuberculin-positive child all symptoms might belong to tuberculous meningitis unless an alternative diagnosis is clearly demonstrated. So thinking, we should not attribute minor degrees of irritability to teething and feeding difficulties before excluding tuberculous meningitis. Should fits occur, we should perform lumbar puncture without delay. When a child has the symptoms of appendicitis we should not hesitate to perform the operation, but careful investigation whether or not the abdominal signs are those of tuberculous meningitis is necessary. When we see a child with otitis media and meningitis it is not certain that the meningitis is of otic origin: there may be two separate illnesses—otitis media and tuberculous meningitis. I have seen two unnecessary operations.

I stated in 1923 that the low sugar level may be the earliest informative change in the C.S.F. in tuberculous meningitis.[1] The low and falling sugar curve I described was often helpful in the diagnosis of tuberculous meningitis. I learned for the first time in 1925 that convulsions can increase the sugar level in the C.S.F.[2] For this reason I do not accept a normal or high level of sugar in the C.S.F. as a sign excluding the diagnosis when convulsions have appeared before lumbar puncture was made, but we repeat it two days later. It was pointed out in investigations by Beck and myself in 1924 that the chloride content of the C.S.F. is often insignificantly lowered at the early stage, and a falling chloride content occurs in meningism also.[3]

It is important to separate tuberculoma of the meninges and brain from tuberculous meningitis. In the former illness the protein level and the number of the cells could be elevated, but the sugar level in the C.S.F. is normal. In tuberculous meningitis the protein is raised, the cell count increased, and the sugar is low. Acid-fast bacilli can be detected in the C.S.F. in both illnesses. When the prodromal stage lasts as long as three months and the child recovers completely we should consider this the first seeding of a tuberculoma in the meninges or in the brain. The long duration argues against the tuberculotoxic meningeal irritation. In my cases, when the first lumbar puncture was normal and the C.S.F. became abnormal five to fifteen days later (after the onset of the symptoms), it appeared that the first symptoms originated from the small caseous cortical tubercles and caseous meningeal plaques. Meningitis developed when these foci broke down, with the dissemination of organisms.—I am, etc.,

Budapest. B. STEINER.

REFERENCES

1 *J. Kinderheilk.*, 1923, **102**, 173.
2 *Orv. Hetil.*, 1925, **69**, 89.
3 *J. Kinderheilk.*, 1924, **103**, 224.

Whither Tuberculosis?

SIR,—While agreeing with Dr. S. G. Tippett (April 9, p. 634) in his desire to eradicate tuberculosis and his implied desire to see the end of sanatoria, several points in his letter provoke comment. If it is expected to discover every case of tuberculous infection in its infancy or before it has a chance to manifest itself in tuberculous disease—though the overwhelming majority of such infections never do so anyway—tuberculin testing would have to be reapplied every few months to the entire tuberculin-negative population, for in young people the development of tuberculous disease can be a pretty rapid process.

Would the information gained have any value in preventing the onset of the disease, which more often than not manifests itself in persons who have had their primary infection (positive reactors to tuberculin) years before? I think we should still have to rely for early diagnosis on the awareness of the patient's relatives and the medical practitioner.

Dr. Tippett proposes a questionary for the consideration of the public, and unless I am being over-imaginative the framing of his questions appears to suggest that the public would have something here to smack its lips over. It is evident to all tuberculosis workers that the public is already superficially and embarrassingly informed in all aspects of the disease through the medium of the lay press, and much time has to be spent in correcting ill-digested impressions of a malady and its handling, which is, after all, a difficult and specialized matter.

The Ministry of Health's criterion for "arrest" of pulmonary tuberculosis demands a period of two years' "quiescence"; and a cured or "recovered" case must have been arrested for three years. The Ministry's caution in classifying a case as "recovered"—i.e., five years since the last symptom or sign of activity—truly indicates the uncertain outcome of this "foul" disease. It will be calculated, then, that a case discharged from a sanatorium in 1948 as "recovered" must have been continuously inactive since 1943, and an "arrested" case since 1945. Any sanatorium that claimed such cases would, with the present demand for a quick turnover, be an unusual institution. In reality, sanatoria have never aimed at anything curative beyond returning their patients home well set to continue their progress towards recovery. A few could be labelled "quiescent" on discharge.

So far as I am aware all cases discharged from public sanatoria in this country are regularly followed up by the local tuberculosis officer, and a good number of statistics on their progress have been compiled by local authorities and others. They tend on the whole to indicate that despite the good work of the sanatoria and the vigilance of the tuberculosis officers the poor man's home is, so far, not a very good environment for the ultimate cure of tuberculosis.

If, therefore, we cannot to-day afford sanatoria, then the need for a substitute is overwhelmingly urgent before we let loose on the community, as we did in 1939, all the potentially infectious inmates—many of them advanced chronic cases given refuge therein often for lack of anyone at home either willing or able to feed and nurse them. There is in all conscience enough tuberculous infection being spread about by lack of sanatorium facilities without our inviting an epidemic through hasty action. By all means let us welcome any new well-considered step in the prevention of tuberculosis, but in the meantime let no well-intentioned spanner be thrown into the groaning, though still working, machinery of the tuberculosis service.—I am, etc.,

Hereford. T. V. R. PHILIP.

Diagnosis of Phthisis in General Practice

SIR,—Attention has been drawn by Dr. Peter Stradling (Nov. 6, 1948, p. 832) and Dr. Bertram Mann (Nov. 20, p. 917) to the practitioner's duty and delay in the diagnosis of phthisis. As one who has been specially interested in this condition I make the following comments with the hope that useful knowledge may be added for those who write such articles and have no sustained experience of general practice.

X Rays.—Hopelessly overworked departments have been the rule in most areas visited, and they are usually under-staffed; since the State Service came into being chaos has prevailed. How can one therefore send cases up—other than to a mass *x*-ray unit—for a host of suggested symptoms without considerable sifting? Shortage of films is another factor.

Cough.—Where this is found to be due to disease of the upper respiratory system, chronic bronchitis or heart failure, smoking to excess with or without alcohol, or secondary to acute infections, *x*-ray examination is *not* recommended unless the cough persists with other signs or symptoms. When one considers the huge numbers of cases of bronchial catarrh in the English climate, this can hardly be regarded as pathological; no *x*-ray examination is suggested for these. Dyspnoea and laryngitis are so common in non-tuberculous conditions that other causes should be eliminated first. Some four patients with tuberculous laryngitis have been seen in my practice in twenty-two years, two before the chest condition was diagnosed. Of the many pneumonias, a similar number proved to be due to phthisis.

Lassitude.—For every case found to be tuberculous in origin many hundreds are due to other conditions, especially functional causes.

Haemoptysis.—Whilst this indicates *x*-ray examination, many other conditions such as neoplasm, mitral disease, bronchiectasis, papilloma of bronchus, and acute bronchitis are commoner causes by far.

Pain in the chest, pleurisy, loss of weight, anorexia, and anaemia, while being symptomatic of tuberculous disease, so commonly occur in other conditions as often to rule it out without further thought. Ischio-rectal abscess, erythema nodosum, and phlyctenular conjunctivitis have become so increasingly rare for a number of years in my practice that as signs they seem remote compared with the commoner features. P.U.O. cases have mostly proved blanks to all investigations. Very few cases of influenzal and recurrent febrile chills have been found to be tuberculous.

Before condemning the practitioner in the delay of diagnosis of phthisis we must remember that there are other illnesses which take up his time. Any cough unaccounted for by multitudinous other causes and which persists for 2 to 4 weeks is investigated for phthisis by any reasonably modern or ancient competent family doctor, especially when accompanied by wasting, night sweats, and haemoptysis. Far too many criticisms are levelled at the family doctor by those who are quite ignorant of prevailing conditions of general practice, and what is more have no prolonged practical experience of this branch of medicine.—I am, etc.,

Hove, Sussex. J. HARTSILVER.

Living Anatomy

SIR,—In the review of *Living Anatomy, a Photographic Atlas of Muscles in Action and Surface Contours* (April 2, p. 577), Professor H. A. Harris, discussing the platysma muscle, states, "This muscle is not figured." In point of fact, the platysma is shown with a photograph and title to itself in Fig. 8, p. 12.—I am, etc.,

Aberdeen. R. D. LOCKHART.

B.C.G.

SIR,—Before we get carried away in our enthusiasm for spending large sums on B.C.G. vaccine and subjecting large numbers of helpless people to it, let us take note of one aspect of the matter that seems to have been ignored. What are the facts? We know that a person with a naturally acquired positive Mantoux reaction is not so likely to develop the disease when exposed to further doses of tubercle bacilli. But is not this only what one would expect in any case? After all, the individuals with a positive Mantoux are those who—to use a biblical simile—have been tried in the fire and not found wanting. In other words, they have demonstrated that they already have an innate resistance to the disease, or they would not have survived to tell the tale. Obviously they will continue to show that resistance, and there should be nothing remarkable in that.

A naturally acquired Mantoux reaction, therefore, is merely a certificate, as it were, that they have successfully come through this ordeal; and in that sense it is, of course, of great value, say, in the selection of nurses. But does it follow that by inducing positive Mantoux reactions artificially we can imitate that same degree of resistance? The Mantoux test itself does not confer the immunity but is merely a coexisting phenomenon. By analogy with other disease we can suspect that it may indicate resistance, but we can be by no means certain as yet. We know that the Mantoux reaction can be positive with the patient going steadily downhill; we also know that the dividing line between immunity and allergy in tuberculosis is a fine one. Until we have some really convincing proofs of the efficacy of B.C.G. let us remember that we are—I continue my metaphor in all seriousness—playing with fire. By all means let us have experiments, but let them be properly controlled ones with the full realization of the risks involved.—I am, etc.,

Fort Hare, Cape Province. W. NORMAN TAYLOR.

Repetitive Auricular Flutter

SIR,—In a recent paper in this *Journal* (Jan. 1, p. 10) two of the undersigned (G.P.-S. and D.W.) reported a case of a boy who developed a cardiac dysrhythmia following contusion. The case was unusual in that an embolic hemiplegia had followed the contusion—the embolus presumably having arisen from a mural thrombus above the damaged endocardium. Electrocardiographic records which illustrated that paper were described as demonstrating an unusual example of heart block. We have heard from Dr. Cornelio Papp that the records were characteristic of repetitive auricular flutter,[1] and this opinion has since been confirmed by examination of a longer section of the record.

Dr. Papp's information is of particular interest, since repetitive auricular flutter is generally held to be a congenital arrhythmia, although there were good reasons for believing that in this case it followed a blow on the chest. As we are unable to find any other record of this aetiological association we thought it desirable to correct the opinion which was expressed in the *Journal*, particularly in view of the fact that the mechanism responsible for the repetitive auricular flutter in this case was an unusual one.—We are, etc.,

GERALD PARSONS-SMITH.
DENIS WILLIAMS.
ALASTAIR HUNTER.

London, S.W.1.

REFERENCE

1 Parkinson, J., and Papp, C., *Brit. Heart J.*, 1947, **9**, 241.

Diparcol in Parkinsonism

SIR,—I read with interest Dr. R. S. Duff's report (April 9, p. 613) dealing with the results of treatment with "diparcol" in some cases of Parkinson's syndrome, and consider that the details of the following case, which came under my care recently, are of sufficient interest to warrant publication.

A female patient, 57 years of age, developed encephalitis lethargica twenty years ago. Before diparcol was given she was unable to attend to the simplest personal duties, gait was markedly affected, and there was excessive salivation. Treatment commenced on Jan. 4, 1949. Initially, one tablet of 0.05 g. was given daily for three days, then later one tablet of the same size night and morning. The patient appeared to be very depressed, and salivation became more troublesome. On Jan. 25 the dosage was increased to three tablets of 0.05 g. daily, and dextro-amphetamine sulphate was also given three times daily one hour before the diparcol. Six days later a further increase to four tablets of 0.05 g. per day was made, and slight improvement followed. From this date dosage was progressively raised, until three tablets of 0.25 g. were being

given each day. On Feb. 22 there was a marked improvement: the patient was sleeping well, was able to use a knife and fork and do some housework, and had become much more cheerful. On March 1 five tablets of 0.25 g. were given daily, and this dose has been maintained ever since. Withdrawal of the dextro-amphetamine sulphate seemed to cause slight deterioration of the patient's condition, and for this reason it was continued. The patient can now cook for herself and can walk considerable distances. Before treatment her speech was almost unintelligible, but it has now, after diparcol therapy, become practically normal.—I am, etc.,

Wishaw, Lanarkshire. OLIVER GRAY.

Amoebic Hepatitis

SIR,—The correspondence in the *Journal* on pre-suppurative amoebic hepatitis has just reached me here. From the evidence of the cases described there would appear to be no doubt that amoebic hepatitis can arise primarily in the British Isles, and this is not surprising, as it occurs in the U.S.A. in areas of similar climate. The correspondence, however, shows that the discovery of cysts morphologically resembling those of *Entamoeba histolytica* is still reported as clinching the diagnosis of amoebiasis. It is most unfortunate that this opinion is still widely held, as it was in the late war responsible for more unnecessary treatment in the Tropics than any other single factor.

Just as in the first world war the confusion of macrophages with vegetative entamoebae gave rise to a great deal of misdiagnosis, so in the late war the identification of yeasts and non-pathogenic cysts as *E. histolytica* led both to widespread incorrect treatment and to the disrepute into which the emetine treatment fell. It was also responsible for the introduction of the prolonged courses of ineffective polytherapy in the so-called cases of amoebiasis, which were sometimes apparently effective, since in many cases the patient never had the disease at all.

Dobell[1] estimated that 10% of the population of England, where the disease is a rarity, had *E. histolytica* cysts in their stools, and Craig[2] has stated that 95% of the population of the warmer States of the U.S.A. are infected. So the search for, or the discovery of, cysts in the stools is in reality a complete waste of time, and though the clinical accounts of the cases reported leave little doubt that the conditions described were of amoebic origin the discovery of cysts in the gut wall or in the stools was a finding of no importance. Amoebiasis, particularly in its chronic form, must be diagnosed clinically, and the laboratory is of little value, though this is undoubtedly one of the conditions where a therapeutic test with adequate emetine injections can be of the greatest value.—I am, etc.,

Nelson, New Zealand. R. L. HAVILAND MINCHIN.

REFERENCES

1 *Spec. Rep. Ser. med. Res. Coun., Lond.*, No. 59, 1921, London.
2 *Etiology, Diagnosis and Treatment of Ameblasis*, 1944, Baltimore.

What is Normal?

SIR,—I think the letter of Dr. David Pyke (April 16, p. 682) under this heading should not go unchallenged. Exaggerated materialism has given rise to many unpleasant and reprehensible practices and much moral deterioration—as we know to our cost in this enlightened twentieth century—but I never expected to see an opinion put forward by a member of the medical profession such as that expressed by your correspondent.

Homosexuality used to be known commonly by a very different name and its indulgence recognized as a very unpleasant, immoral, and unnatural practice. Your correspondent suggests that it is not abnormal and "can hardly be regarded as a grave menace to social security." Apart from other considerations, a practice which runs counter to normal procreative activities *must* be considered abnormal; and, as regards the statement that it is not a menace to social security, the absence of moral control in its devotees and weakening of moral fibre associated with it is a sufficient answer.

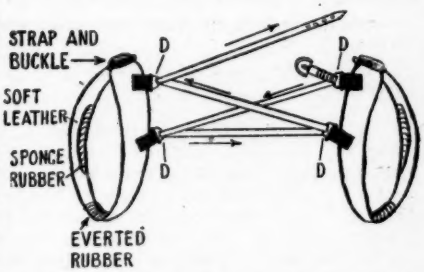
I refuse to believe that "37% of all American males have homosexual experience after adolescence (and more before)," and, even if it were true, there is no reason for condoning this loathsome practice or suggesting its normality. It can only lead to moral and, in the long run, to physical deterioration. In that sense it is a distinct menace to social security.

Those of us who have been to boarding school know of its existence among some of the degenerate, or immature and ignorant, youth of the nation and have seen some of its evil consequences. The fear of it has been an anxiety to many conscientious parents and schoolmasters, and it is incumbent on us all to try to help the young, by advice and example, to a better understanding of their impulses and the necessity of keeping them under control. Where responsible adult offenders are concerned, sterner measures for the repression of this odious vice, by classing it as a criminal offence, should be enforced.—I am, etc.,

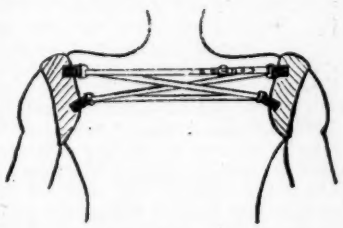
Ditchling, Sussex. W. BARRINGTON PROWSE.

Shoulder-harness

SIR,—Having had the fortune to break a collar-bone for the third time, and having experienced the discomfort of strapping, plaster, and bandages—on the last occasion most carefully and efficiently applied by the surgeon according to Robert Jones's approved method and adjusted every two or three days in the beginning—the idea of the shoulder-harness occurred to me. It was carried out by the local saddler—Mr. L. O. Illsley—in one day.



The harness consists of two soft leather rings 2¼ in. (6.4 cm.) wide, the circumference of which can be adjusted by a strap and buckle or by press-stud fasteners and need not be stitched; they are lined with sponge-rubber glued to the under surface of the leather with rubber solution and everted with a few stitches to fit comfortably in the axillae. Each ring has two buckles with runners from which the tongues have been removed to facilitate the sliding of the adjusting strap. The adjusting strap is of similar leather but not lined, about 60 in. (132 cm.) long, with a buckle at one end and a number of holes punched at the other end for adjustment as required. This strap is threaded through the runners as shown in the sketch. This device holds the shoulders back most efficiently and comfortably, and an ordinary arm sling may be worn in addition if considered necessary.



HARNESS APPLIED

The advantages claimed for this harness are: (1) Its perfect comfort whether worn on the bare anatomy or preferably over a thin vest or shirt. (2) Its easy removal and reapplication by any person who may be assisting the patient in his or her toilet and dressing in the earlier stages of the disability, or even by the patient himself. (I was able to do this for myself after the third week.) (3) The rapidity with which it can be applied and adjusted without discomfort to the patient caused by the application of plaster or yards of roller bandage. Although my bandage was most efficiently applied, carefully padded with plenty of cotton-wool, and readjusted with infinite care every second or third day during the first fortnight, the cotton padding invariably lumped under the armpits and the bandage rucked up or slackened or chafed; this did not occur with the rubber padding, which retained its resilience even on sweaty occasions. I have ridden a push bicycle or a horse after the fourth week of the injury wearing the harness over my shirt, having applied it myself without any assistance.—I am, etc.,

Oakham. H. J. MANOCKJEE CURSETJEE.

Complication of Podophyllin Therapy

SIR,—Since the appearance of the article by Mr. J. E. Semple entitled "Papillomata of Bladder Treated with Podophyllin" (June 26, 1948, p. 1235) a trial has been given to this form of treatment, using weekly instillations of 15 ml. of 4% podophyllin.

A woman, aged 63, was first seen in 1935, when she had three papillomata near the left ureteric orifice. During the next thirteen years she had regular treatment with perurethral diathermy. At cystoscopy on Aug. 16, 1948, a tiny seed-like recurrence high up on the left wall was seen. Five weekly instillations of 15 ml. 4% podophyllin were then given. The last instillation was on Dec. 16, 1948. Twelve days later the patient passed a mass about the size of a date stone per urethram, with considerable pain and difficulty. Analysis reports this to consist of podophyllum resin. On Jan. 5, 1949, the patient passed a further mass equal in size to the first. The weight was about 0.7 g. Each instillation of podophyllin contained 0.6 g. Approximately 50% of the podophyllin was therefore returned in the form of the calculi. Cystoscopy on Jan. 10 showed no evidence of further podophyllin. High up on the left side of the bladder three tiny papillomata were seen in a group about the size of a pin-head.

While there has been no apparent destruction of the growths by podophyllin, it was not for this reason that the treatment was adopted. It was felt that podophyllin may destroy the microscopic recurrences still not visible. It will therefore take several years to assess the ultimate value of such a course.

I should like to thank Mr. Hugh Donovan for permission to publish this case.

—I am, etc.,

Birmingham, 15. A. G. JARRAMS.

Teaching First Aid

SIR,—At the recent conference of first-aid workers and instructors held under the auspices of the ambulance department of the National Fire Brigades Association, some 150 delegates from all parts of Great Britain and Northern Ireland attended. Many of them were emphatic that the standard and teaching of first aid in this country are seriously handicapped by the inadequate number of doctors who are prepared to spare time for this purpose.

It is true that first-aid treatment ends where medical treatment begins and that many of us know very little about first aid. Yet we rely (especially those of us on the staff of a casualty hospital) even more than the general public do upon efficient first aid for those who are brought in under our care or are transferred by ambulance at our request.

It is therefore a disservice both to the public whom we serve and to our medical colleagues if we cannot find time—busy as we may be in these days—to take an interest in and instruct those (whether St. John, Fire Service, or other ambulance workers) who seek our help and guidance in this matter. The medical background which we doctors can supply to the practical common sense of first aid makes all the difference to the enthusiasm with which the subject is approached by those who learn it.

May I therefore appeal through your columns to those doctors who are approached by any organization for first-aid lectures or examinations to do their utmost to lend a helping hand and so encourage the voluntary spirit on which this sort of work must always rely?—I am, etc.,

F. J. CURTIS,
Hon. Chief Surgeon,
National Fire Brigades Association.

Redhill, Surrey.

Approach to the Frontal Lobes

SIR,—I am amazed at Dr. Max Valentine's enthusiastic support (March 5, p. 411) of Dr. Freeman's assumption that transorbital lobotomy cuts only the thalamic connexions of areas 9 and 10. Everyone who has some experience in experimental brain surgery knows the difficulty in producing a predictable lesion even under favourable circumstances.

I certainly do not want to belittle the neurosurgical work done in the past to alleviate mental illness, but it has always been a medical practice to give a specific indication for an operational intervention. The present state of frontal-lobe psychosurgery may be compared with the procedure of an abdominal surgeon who introduces a knife through a small abdominal incision in the hope of cutting certain portions of the intestine and thus curing constipational trouble for which no organic basis can be found. No one would defend such a procedure, even if temporary relief were obtained, yet a similar procedure within the brain cavity seems to attract many followers.

I entirely agree with Dr. Valentine that appropriate teams in excellent collaboration are working in this field in the States. An example of *critical* teamwork can be found in a paper by the Connecticut Lobotomy Committee.[1] As Dr. Valentine has misunderstood my plea for this collaboration I would like to restate the main points of my letter (Jan. 29, p. 193)—namely, that further advances in the field of lobotomy can only be hoped for if the operational route chosen allows a clear assessment of the anatomical regions which have been undercut or removed. Only if one is reasonably certain about this can a correlation of psychiatric results and the operation be attempted. The desirability of this becomes obvious if one reads Freeman and Watt's remark that "each surgeon seems to have his own preference."

Dr. Valentine quotes the favourable results of Dr. Freeman's 100 cases started in 1946. It is certainly too early yet to draw definite conclusions from this material. A surgical intervention at the highest level of human personality—the frontal lobes (cf., Halstead's *Brain and Intelligence*, 1947, Chicago)—should be done with great caution, and only very critical evaluation of the results can lead to progress and prevent disappointment in a method which raises high hopes at present. I do not want to deliver a counterblast to psychosurgery, as Dr. Valentine suggests; I only maintain that this branch of neurosurgery is still in an experimental stage and any new blind approach will delay the understanding of the underlying mechanism of mental recovery after lobotomy.—I am, etc.,

P. GLEES.

Oxford.

REFERENCE

1 *Proc. Ass. Res. nerv. ment. Dis.*, 1948, **27**, Ch. 35.

Injury Caused by Ear-rings

SIR,—The following case is reported on account of its rarity.

A young lady, aged 23, complained that the lobes of both ears had been severed following the use of spring ear-rings. The photograph shows the condition of one ear. The other was similar. She stated that she had been in the habit of wearing stud ear-rings which fastened on with spring clips. She never noticed any unusual pain or discomfort, but after wearing the ear-rings for some weeks without removing them (exact time unknown) she found them difficult to take off. When they were taken off she found the ears had sloughed under the clips. Both ears healed rapidly, but she felt they were so unsightly that she did not go out in public without her head and ears being covered. Surgical repair was easily accomplished.

Ear-rings of this type are in universal use. The lobes of the ears are insensitive, and damage can occur without noticeable discomfort unless such clips are removed frequently.—I am, etc.

C. SOMERVILLE-LARGE.

Dublin.

Diathermy Prong Forceps

SIR,—Mr. A. Wilfrid Adams (April 9, p. 631) has added a new diathermy appliance to our list of special instruments. I have always been interested in the surgical uses of diathermy, and I have described[1] how any instrument may be used for diathermy by simply soldering to a convenient spot on it a length of ordinary electric flex. (Stainless-steel instruments cannot be soldered.)

Since writing that paper I have found that it is unnecessary to solder the lead to the instrument. Two inches (5 cm.) of insulation is removed from a piece of lamp flex and the bare wire is then fixed to the instrument by winding and held in position by covering the union with surgical adhesive tape. If

one wishes to be very thorough this junction is then overwound with Chinese twist silk. The preparation is all so simple that the theatre sister can "electrify" any surgical instrument at a moment's notice before operation. Boiling is the method of sterilization.

A single strand of ordinary lamp flex is much better than the usual heavily insulated diathermy leads, because the flex does not fracture so easily, resists boiling almost indefinitely, and, being light in weight, it is not cumbersome for the surgeon. Instruments made in this way can be repaired on the spot; also the expense of being specially designed, with the possibility of a very limited demand, is avoided.

I can assure readers that in these specially designed instruments the socket used to attach the lead is rarely free from trouble. It gets in the way when used at operation, and one is liable to burn the patient in unexpected places on account of the protuberance of the attachment.—I am, etc.,

Sheffield, 1. DAVID AIKEN.

REFERENCE

1 *Lancet*, 1944, **2**, 212.

Pain in Childbirth

SIR,—The above, it seems to me, occupies at present a region of political hysteria from which it would be wise to remove it. Based on forty years of maternity work in general practice, it may be these observations may not be entirely valueless.

I propose to deal with the normal case. These represent over 90% of all midwifery. The abnormal is, or should be, outside the care of the general practitioner: it belongs to the institution and the specialist obstetrician. The greatest danger in midwifery is its normality; one is apt to be lulled to sleep by this. It is difficult for a man to measure the actual pain of childbirth, as he does not share it. Nature, when she gave the woman that proud and exclusive duty, without doubt also gave her the means of discharging it. I am sure that woman bears pain better and more patiently than man.

An attempt can be made to assess the actual amount of childbirth pain in terms of time and intensity.

Time.—The average labour lasts some 10 hours from the first discomfort to the complete dilatation of the os. These pains occur at 15-minute intervals, and last one minute on the average. It is only in the last two or three hours at most that they can be called at all severe. That is, 40 pains in all and 40 minutes in time. This stage is quite efficiently dealt with by (1) reassurance, and (2) sometimes pethidine or a like drug. No anaesthetic is needed. These pains, I say, are not agony. The next stage is to the delivery of the child. This lasts some two to three hours. These pains occur every five minutes and last also, on the average, one minute. That is, some 36 pains of one minute each; of these pains the last dozen or so are all that can be claimed as very severe. It is for these that analgesia is more or less needed or exhibited. This means an anaesthetic, and an anaesthetic means an added risk to mother and/or child.

Intensity of Pain.—I have asked mothers suffering from (1) gallstone colic, (2) renal colic, (3) acute lumbago, (4) acute sciatica, (5) herpes zoster (severe), (6) headache, how these pains compared with childbirth pain. They said (1) and (2) were worse than childbirth pain; (3) and (4) were as bad as childbirth pain; (5) they were doubtful which was worse; and (6) definitely less than childbirth pain.

—I am, etc.,

Glasgow, E.1. JAMES COOK.

Dysentery in South Persia

SIR,—The paper entitled "Dysentery in South Persia," by Dr. I. S. Stewart (April 16, p. 662), is a description of 1,430 cases of "dysentery," no pathogen being found in 813 (56.6%). Ten cases developed hepatitis, although neither cysts nor amoebae were found in the stools, but the patients responded to emetine. The author believes that a bacillary origin is likely in the 813 cases in which no pathogen was seen or isolated. All the cases—proved and dubious—were treated with sulphaguanidine, 20 g. a day (apparently), and all recovered after an average of three or four days' treatment. Thirty-five patients became clinically normal, but were found to be still passing infected stools and were "disinfected" by a further course of sulphaguanidine.

The problem of the patient with 20 or more watery stools a day containing mucus, pus, and blood, but no demonstrable protozoal, flagellate, ciliate, helminth, or bacillary cause—the so-called "gippy tummy," "Abadan tummy," "Singapore tummy," "hill diarrhoea," "Bombay tummy," etc.—has excited a great deal of interest. In the annual reports of the medical department of the Anglo-Persian (Anglo-Iranian) Oil Co., Ltd., for 1926 to 1939 inclusive this problem of geographical "tummy" is often discussed by the then pathologist. It is a curious and rather disturbing fact that before the invention of the "sulpha" drugs these cases were made clinically normal by the administration of sodium sulphate, in hourly or two-hourly doses for two, three, or four days, together with a low diet.

This geographical "tummy" is the bane of travellers and new arrivals in the lands east of Suez. Old-stagers are liable to have an acute attack after engaging a new personal servant or cook. It is rather significant that these attacks can be avoided by having all food served very hot, drinking coffee or tea with hot milk, and having plates, knives, forks, spoons, and drinking vessels hot from the oven. Enterotoxin due to staphylococci, *Proteus vulgaris*, certain strains of coliform bacilli, or a virus are possible causes.—I am, etc.,

Epping, Essex. FRANK MARSH.

Medical Journals for German Doctors

SIR,—It is indeed heartening to read in the *Journal* Mr. Zachary Cope's review (March 26, p. 530) of a sad little book, a book for which, he says, the chief use in this country should be "to stimulate surgeons to help their brethren in Germany to learn of the wonderful new remedies of which they know so little."

And not alone surgeons. Letters from a friend to whom, as to his colleagues of the University of Marburg, I have recently been under heavy debt for help in the "displaced persons" problem, could leave one in no doubt that the most grievous affliction of the German doctor of to-day is his sense of isolation, of being cut off from the heart and thought of his professional brethren throughout the world.

If any doctors who may have old medical journals to spare would address these to the medical schools of any of the German universities they would be astonished at the response so little a thing would evoke. To any who, not having contacts in Germany, might seek a more individual response, journals directed to me would be forwarded in their names.—I am, etc.,

50, Ebury Street, London, S.W.1. J. P. S. DUNN.

POINTS FROM LETTERS

Survival of a Premature Twin

Dr. J. ERNEST THOMAS (Cwmaman, Glam) writes: I beg the opportunity of reporting the following case. On Jan 5, 1949, I attended at the birth of male twins, born five weeks prematurely. Both were breech deliveries, the elder weighing 2 lb. (907 g.) and the younger 8 lb. (3.6 kg.). At 4 days old the weight of the smaller baby had dropped to 1 lb. 12 oz. (794 g.). He was then admitted to Aberdare General Hospital, and while there has been under the constant care of Sister Essery. On Jan. 15 his weight was 1 lb. 15 oz. (879 g.), and on Feb. 1 it was 2 lb. 6 oz. (1,075 g.). On April 4 the baby weighed 4 lb. 3¼ oz. (1,917 g.). During the whole of this period the child has been nursed in a side ward with screens around its cot. For the first 14 days he was fed on breast milk, commencing with ½ dr. (1.75 ml.) and increasing daily until at 14 days he took about 1 oz. (28.4 ml.) at each feed. After 14 days the donor of the breast milk developed mastitis and the supply ceased. The child was then fed on a proprietary milk preparation and a polyvitamin emulsion was also given.

Specialization

Dr. F. M. PURCELL (Fermoy, Co. Cork) writes: Lest no other readers should record their appreciation of the discussion on "Specialization" at a meeting of the Section of Medicine of the Royal Society of Medicine (reported in the issue of April 2, p. 586), I wish to record mine. I feel sure that many other doctors, men of wide experience, would join me in acknowledging the soundness of the views expressed, especially those of Mr. Dickson Wright, Sir Robert Young, Sir Henry Cohen, and Dr. Maurice Davidson. It is to be hoped that this report will be read thoroughly by young doctors eager to become specialists.

Obituary

J. R. CURRIE, M.D., F.R.C.P.Ed.

John Ronald Currie, who was the first professor of public health at Glasgow University, died in Edinburgh on April 13 at the age of 78. Professor Currie had retired from the chair in 1940, but until just about a year ago he had retained the posts of medical officer of health for the county of Bute and the burgh of Rothesay, thereby completing almost a half-century in the field of public health. His emergence as a teacher came only in 1922, when he accepted the chair of preventive medicine at Queen's University, Kingston, Canada. A year later the Henry Mechan chair of public health was founded at Glasgow, and Currie returned to Scotland to be its first occupant. His early academic training reflected that scholarly and humanistic approach to medicine—so rare nowadays—which was to mark his later life. After receiving his early education at Ayr Academy Currie went to Edinburgh University, to graduate M.A. there in 1891. A period at Oxford followed, and he obtained first-class honours in Classical Moderations, taking his B.A. in 1896. Returning to the West of Scotland, he studied medicine at Glasgow and won many distinctions as a student, graduating in 1898 with commendation. He took his D.P.H. from Birmingham in 1904.

During the early 1900's the fever hospital at Belvidere in Glasgow had as its physician superintendent Dr. John Brownlee, who collected round him a group of men most of whom were later to make their own reputations in the public health service. At that time to be chosen as one of Brownlee's residents was itself a mark of distinction. Currie came under his influence in 1905, and in the succeeding few years he made his first contributions to medical literature, writing a number of scholarly papers on the new subject of serum disease. In 1910 he presented for the M.D. a thesis which was highly commended. It was on this firm foundation of experience in infectious diseases, then so important to a public health career, that he proceeded to build further practical knowledge from posts at Stirling, Dumbarton, Chester, and Fife. During the first world war Currie served as a sanitary specialist in the R.A.M.C., returning to Scotland to work with the Board of Health, which later became the Department of Health for Scotland. Such a breadth of practical experience, added to his earlier classical education, made an academic career a natural choice. It may have been something of an accident that caused Canada to be the scene of his first teaching post, but it was most appropriate that he should return so speedily to his old medical school. He was elected F.R.C.P.Ed. in 1934, and on his retirement from the chair he received the honorary degree of LL.D. For many years he was a valued anonymous contributor to this *Journal*.

It was easy to overlook Professor Currie's many excellent qualities. Naturally shy and retiring, his erect, rather soldierly appearance made him a somewhat forbidding figure to his students. But the stern exterior was an easily displaced mask behind which lay a sense of the absurd which would emerge to reveal a very lovable personality. His mind, nurtured on a course of "fine, confused feeding," had that richness which comes from a reverence of the classics; and his breadth of outlook was best appreciated in after-dinner conversation.

FELIX D'HERELLE, M.D.

Professor Felix d'Herelle, who was well known for his work on bacteriophage, died in Paris on Feb. 22.

Felix d'Herelle was born at Montreal, Canada, in 1873 of French-Canadian parentage, and though he retained throughout life his British nationality, of which he was always proud, he gave to his acquaintances the impression of being rather more French than British in temperament and outlook. Educated at the Lycée Louis le Grand, Paris, he took his baccalaureate in 1888, and then returned to his native Canada to study medicine, and graduated M.D. at Montreal. He was professor of bacteriology at Guatemala from 1901 to 1907, and bacteriologist to the Mexican Government for the next two years. He joined the staff of the Pasteur Institute in Paris in 1909. There he was *chef de laboratoire* from 1914 to 1921. During these years his services were often at the disposal of foreign Governments. Thus he went on special missions to the Argentine in 1911–13, Turkey in 1914, Tunis in 1915, and to Indo-China in 1921. After leaving the Pasteur Institute, d'Herelle went to Leiden University, Holland, as professor extraordinary in 1922. Two years later he was appointed to the International Quarantine Council, Egypt, as director of the laboratory service, which was based on Alexandria. There he remained until 1926, when he went to India on a special mission at the request of the British Government. He was appointed professor of protobiology at Yale University in 1928, retiring from that post in 1933 in order to found his Bacteriophage Laboratory in Paris. In the years that followed he was entrusted by the Government of the U.S.S.R. with the setting up of bacteriophage research institutes at Tiflis, Kiev, and Kharkov.

It was in 1917, in a note to the French Academy, that he published his observations, "Sur un Microbe Invisible, Antagoniste des Bacilles Dysentériques." The phenomenon of bacteriophage had been discovered earlier by Twort (1915), who spoke freely of it during his war service, but the graphic description given by d'Herelle, and his insistence that he was dealing with what is now recognized to be a virus, startled the scientific world, and the importance of his findings was immediately appreciated. He received many honours. Doctorates were conferred upon him by the Universities of Montreal, Quebec, Yale, Leiden, Tiflis, and Bakou. He was an honorary member of several learned societies—the Royal Society, Canada; the Société de Biologie, Paris; the Société de Microbiologie, Leningrad; and the Scientific Club, Winnipeg. But he was specially proud of the Loewenhoek Medal of the Académie des Sciences, Amsterdam, which he was awarded in 1925. The only French scientist to have received this distinction before d'Herelle was Louis Pasteur.

Of d'Herelle's better-known English writings, mention may be made of "Immunity in Natural Infectious Disease" (1924), which was followed by "The Bacteriophage and its Behaviour" (1926), "The Bacteriophage and its Clinical Applications" (1930), and "Studies on Asiatic Cholera," the latter in conjunction with Malone (1930). His most important writings in French were: "Le Bactériophage, son Rôle dans l'Immunité" (1921); "Les Défences de l'Organisme" (1923); "Le Phénomène de la Guérison dans les Maladies Infectieuses" (1938); and Étude d'une Maladie: le Choléra, Maladie aux Paradones" (1948). A clear thinker, with an impeccable laboratory technique, and endowed in high degree with the logical outlook of his race, d'Herelle appeared at times somewhat intolerant to those who differed from him. Yet to his friends and associates he was one of the kindest and most loyal of men.

Dr. ARTHUR ERNEST WHITEHEAD died at Bridlington on March 13 at the age of 75. Educated at University College, Sheffield, he qualified in 1900, and after the usual house appointments and a short period in practice at Almondbury he settled in Bridlington in 1905. He soon built up an extensive practice and became prominent in the social life of the town. He served the Lloyd Hospital for forty-four years as a medical officer on the staff and as a member and later chairman of the board of management. Dr. Whitehead had many interests. He was a keen yachtsman and an active freemason. After his retirement from practice in 1938 he was elected a member of the East Riding County Council, and he became a J.P. and acted for some years as chairman of the juvenile court. During the 1914–18 war he served in the R.A.M.C. at Salonika, and in the 1939–45 war he was in charge of the civil defence scheme for Bridlington. Dr. Whitehead's interest in mankind—especially the local variety—remained with him to the end, and confinement indoors he found a sore trial. He must have known and been known by nearly everyone in the East Riding, and his short, stocky figure and cheerful smile were very much part of the local scene. He leaves a widow, two sons, and a daughter, and to them the sympathy of his colleagues and friends will be extended. Both sons were awarded the Military Cross in the recent war.—C. J. G. T.

FRANK GRIFFITH THOMAS, who died at his home at Bournemouth on March 22 at the age of 76, was a native of Swansea and a son of Dr. Jabez Thomas, the founder of the first eye hospital in that town. He succeeded his father as ophthalmic surgeon to the Swansea General and Eye Hospital in 1900. He remained in Swansea until about eighteen months ago, when he retired because of ill-health, which unfortunately left him unable to enjoy to the full a well-earned rest. Frank Thomas

graduated M.B., B.Ch. in 1897. He was a student at Cambridge and at Guy's Hospital, where he became house-physician and clinical assistant. He was also clinical assistant at the Royal London Ophthalmic Hospital, and later registrar at the Royal Eye Hospital. After studying in Vienna he returned to Swansea, and was the ophthalmic surgeon to the hospital there until 1924, when he was appointed consulting ophthalmic surgeon. He was also ophthalmic surgeon to the Gorseinon, Aberdare, Port Talbot, and Brecon hospitals as well as to the Swansea Institution for the Blind, the Cambrian Institution for the Deaf and Dumb, and the Orphan Home. In addition, Thomas was an ophthalmic medical referee for the South Wales courts and for the Ministry of Pensions. During the 1914–18 war he held the rank of captain in the R.A.M.C., and in the last war he took his full share of responsibility in the E.M.S. As Swansea suffered badly from air raids this meant a great deal of work for a man of advancing years, but he never shirked it. Frank Thomas was an ophthalmic surgeon of exceptional ability, and his knowledge of ophthalmology, and of medicine in general, was profound. He was a man whose opinion on difficult eye conditions was always worth having, and, apart from his large experience and his love for the subject of ophthalmology, he had an almost uncanny flair for spotting the cause of, and for knowing the best treatment for, many puzzling diseases. He was one of the originators of the Oxford Ophthalmological Congress, and he was a vice-president of the Ophthalmological Section when the Annual Meeting of the B.M.A. was held in Swansea in 1928. His wide experience of compensation cases, on which he reported with strict impartiality, made his findings of great value to both employers' and workmen's representatives. Frank Thomas was good at games, and rowed for Caius while an undergraduate. His golf was sound, and he also played a very good game of billiards and excelled at croquet. Frank Thomas was very fortunate in meeting his future wife when she, a doctor's daughter and a doctor herself, was a resident at the Swansea Hospital assisting him in the eye department. Throughout his life she looked after his welfare devotedly, and in addition was able to assist him at his work, being on the honorary staff of some of the hospitals he visited. She survives him with two daughters and two sons, one of the sons being an orthopaedic surgeon in Hereford and the other an ophthalmic surgeon at Bournemouth. Although Frank, as his friends knew him, or "Dr. Frank," as his patients affectionately called him, has passed away, his memory will always remain green in Swansea and, indeed, in South Wales. To work with him was a privilege.—R. T.

H. E. Q. writes: Frank Thomas was a skilful diagnostician and an accomplished operator. He will long be remembered by his colleagues on the hospital staff and by general practitioners in South Wales as well as by his patients for his ready help and advice. Outside his professional work his chief interest for many years was golf, and he was closely associated with the development of Pennard Golf Club from its earliest days until a few years ago, when failing health put an end to his active participation in the game.

Dr. HAROLD WACHER, who died on April 11 after a long illness, was the son of a well-known physician. He was born in Canterbury in 1876, and educated at the King's School, Canterbury, St. John's College, Cambridge, and Guy's Hospital. He joined his father in practice in Canterbury shortly after he graduated M.B., B.Ch. in 1903. Apart from service in Egypt and France from 1914 to 1918, he practised continuously in Canterbury until the onset of his illness nearly two years ago. For many years Dr. Wacher was senior physician at the Kent and Canterbury Hospital, and he worked hard at the planning and financing of the new hospital which was opened in 1937. He also served as poor-law officer and medical officer to the municipal hospital, Canterbury, from the time of his father's retirement. A born actor, he was well known at Guy's in the "Disguysed Minstrels" and as one of the founders of the residents' play. He was even better known in Canterbury for his acting with the "Old Stagers" in the last forty years. As an antiquary and a fellow of the Society of Antiquaries he had studied the history of Canterbury, and he wrote his M.D. thesis in 1928 on the medical history of Canterbury. To a wide circle of friends he was a lavish entertainer, and his good fellowship and his artistry as a raconteur and after-dinner speaker made him welcome at many social gatherings. Canterbury has lost a good friend and servant and one who did a great life's work in practical medicine, in common humanity, and in lightening the lives of his fellows with good humour and laughter.

Dr. FOSTER COATES died at the age of 68 at his home in Belfast on March 23. The son of Dr. Stanley Coates, he was educated at the Methodist College and Queen's College, Belfast. He graduated B.A. in 1900, M.B., B.Ch., B.A.O. in 1905, and proceeded M.D. in 1907. He took the D.P.H. in the same year, also in the Royal University of Ireland. He was an R.M.O. and afterwards a registrar at the Royal Victoria Hospital, and on his return in 1919 from active service in France he was appointed an assistant physician. He was also for some years a visiting physician to the Forster Green Hospital for Diseases of the Chest. In 1946 Foster Coates was elected an honorary consulting physician to his old hospital, which he had served so faithfully for over forty years. An active member of the B.M.A., he was president of the Ulster Branch in 1928–9, and vice-president of the Section of Medicine at the Belfast Meeting in 1937. He was also a member of the Association of Physicians, and in 1935–6 was president of the Ulster Medical Society. Dr. Coates was a lecturer in clinical medicine in the Queen's University of Belfast and a member of the Senate. A sound physician with a greater love for purely clinical than for laboratory or even radiological methods of diagnosis, he gained the respect and affection of generations of house-physicians and students, who quickly appreciated his integrity and his acumen. These qualities were much valued by his Majesty's judges and members of the legal profession when he gave evidence in many medico-legal cases, particularly under the Workmen's Compensation Acts. Those who were his colleagues will not soon forget his kind heart and unselfish comradeship. He is survived by his widow, two sons, and a daughter.

SARAVANAMUTTU THAMBIAH, who died on Feb. 18, was born in Ceylon in 1891. After taking his B.A. at Madras University in 1913 he entered the Medical College there and qualified in 1917. He served in the Army from 1918 to 1926 and was awarded the Military Cross. Until 1929 he was lecturer in materia medica at the Stanley Medical School, Madras, and then he came to Britain to continue his studies. Dr. Thambiah took the Scottish triple qualification in 1929 and the Edinburgh M.R.C.P. a year later. Returning to India, he was appointed professor of medicine at the Prince of Wales Medical School at Tanjore, and six months later was posted to the Government General Hospital at Madras as lecturer in dermatology and physician in charge of the skin department. He was responsible for the organization of this clinic, which he raised to a very high standard of efficiency. In 1940 he was made an additional professor of medicine at the Madras Medical College, and in 1945 professor, though he still continued to hold the post of dermatologist to the Government General Hospital. In recognition of his services he had conferred on him in 1945 the title of Rao Bahadur. A year later he left the service on completing his fifty-fifth year, and led a quiet life in retirement, though continuing his consulting practice in Madras. In October, 1948, he was elected F.R.C.P.Ed., and shortly afterwards his final illness began. Dr. Thambiah's popularity was such that he was consulted by patients from the north of India, Malaya, and Ceylon. His untimely death at the age of 58 leaves a gap which it will be difficult to fill. He is survived by his widow, two daughters, and a son.

Medico-Legal

DEATH FOLLOWING TREATMENT WITH DICOUMAROL

What seems to be one of the first cases of death following the administration of dicoumarol to be considered by a coroner's court was reported recently. The evidence was heard by the Battersea coroner, Dr. R. B. Hervey Wyatt, on April 4.

A woman of 70 went to her doctor on March 7, 1949, complaining of pain in her left leg. Her general practitioner, in his evidence, said that he found a deep thrombosis of the left femoral vein from the calf right up to Poupart's ligament. He ordered her to stay in bed and gave her some glycerin and belladonna paint. He also left a prescription for 100 tablets of dicoumarol and told her to take six tablets on the first day and then four tablets daily.

On March 14 the patient was restless and excitable, so he told her to discontinue the glycerin and belladonna paint and to take only two tablets of dicoumarol a day. The doctor said that the dose he ordered was that recommended by the makers, and he also consulted the *British Encyclopaedia of Medicine*. He had used the drug on four other cases in a similar dosage, and in one of them for 16 days without ill effect. He did not recall hearing of the danger of the drug or that its effect should be checked by examinations of the patient's blood.

On March 26 he saw the patient again, diagnosed renal colic, and sent her into hospital. She had had severe pain in the left

loin and haematuria. On the following day, according to the medical registrar at the hospital, she vomited a small amount of blood on two occasions, and after passing blood per rectum she collapsed. She was given three pints of whole blood and a vitamin-K preparation. Her general condition improved but the blooding-clotting time was still prolonged. On March 31 she again collapsed and quickly died.

At necropsy there were a few petechial haemorrhages scattered over the trunk. There was a haemorrhage beneath the pericardium and one or two subendocardial haemorrhages. There were also subpleural haemorrhages and evidence of extensive retroperitoneal bleeding. The stomach was full of blood and there was a large haemorrhage into the mesentery of the small intestine. There was also extensive haemorrhage into and around the pelvis of the left kidney. In the view of the pathologist the cause of death was "haemorrhage from the stomach and intestines due to treatment with dicoumarol." A verdict of misadventure was returned in accordance with the pathologist's findings.

Universities and Colleges

UNIVERSITY OF EDINBURGH

The eighth Sharpey-Schafer Memorial Lecture will be delivered by Professor H. S. Raper, F.R.S., Professor of Chemical Physiology and Dean of the Medical School in the University of Manchester, in the anatomy classroom of University New Buildings, Teviot Place, Edinburgh, on Thursday, May 19, at 5 p.m. His subject is "Fat Absorption and Some of Its Problems." All interested are invited to attend the lecture.

UNIVERSITY OF LONDON

Sir James S. Ross (Ministry of Health) will deliver three lectures on "The National Health Service" at the London School of Economics and Political Science, Houghton Street, Aldwych, W.C., on Tuesdays, May 3, 17, and 24, at 5 p.m.

A Special University Lecture on "Some Advances in Chemotherapeutic Research at the Pasteur Institute" will be delivered by Professor Jacques Tréfouël (Pasteur Institute, Paris) at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Tuesday, May 10, at 5.30 p.m.

A series of special lectures will be given, in connexion with a course on neurosurgery, at the Institute of Neurology, National Hospital, Queen Square, London, W.C., on May 30, June 2, 9, and 30 and July 7, at 5 p.m., as follows: May 30, Professor H. Olivecrona (Stockholm), "Arteriovenous Aneurysms of the Brain"; June 2, Professor A. M. Boyd, "Intermittent Claudication"; June 9, Sir Hugh Cairns, "Surgical Principles in Intracranial Surgery"; June 30, Professor Geoffrey Jefferson, F.R.S., "Rathke's Pouch Tumours"; July 7, Mr. Geoffrey Keynes, "Surgical Treatment of Myasthenia Gravis." The fee for a single lecture is 10s. 6d. Lectures on "Some New Facts on the Painful Stump," by Professor René Leriche (Paris), and on "Hemiplegic Patients as seen by a Neurosurgeon," by Professor H. Krayenbühl (Zurich) will be delivered on dates to be fixed later.

The St. Cyres Lecture on "Withering" will be delivered by Professor K. D. Wilkinson at the Institute of Cardiology, National Heart Hospital, Westmoreland Street, London, W., on Wednesday, June 15, at 5 p.m. Admission to the lecture is free to all medical practitioners and senior medical students.

A lecture on "Normal and Pathological Physiology of the Kidney" will be delivered by Dr. D. D. van Slyke (Rockefeller Institute for Medical Research) at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Monday, July 18, at 5.30 p.m.

The following candidates at the London School of Hygiene and Tropical Medicine have been approved at the examination indicated:

ACADEMIC POSTGRADUATE CERTIFICATE IN PUBLIC HEALTH.—A. O. Abushamma, J. E. G. Earle, A. F. Fowler, A. T. H. Glanvill, J. W. McAllan, J. R. Mayers, J. T. Navaratnam, C. Rajaratnam.

UNIVERSITY OF BRISTOL

The Council of the University has decided to establish a Chair of Pharmacology for the session 1949–50 and has appointed H. S. Heller, Ph.D., M.B., B.Ch., M.R.C.P., to be its first occupant.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council of the College held on April 7, with Lord Webb-Johnson, President, in the chair, the Jacksonian Prize for 1948 was awarded to H. L. M. Roualle (St. Bartholomew's) for his essay on malignant disease of the thyroid gland. A certificate of honourable mention and an honorarium were awarded to C. G. Rob (St. Thomas's) for his essay on the same subject. The John Hunter Medal and Triennial Prize were awarded to Peter M. Daniel (Oxford) for his research work on "The Discovery of Afferent Nerves and Muscle Spindles in the External Ocular Muscles: also Contributions to the Discovery of Shunt in the Renal Circulation."

The following were elected Fellows of the College without examination: Mr. Arthur Woo (Hong Kong), Mr. R. J. Cann (Guy's Hospital), Professor Robert Bradlaw (Newcastle), Professor Thomas Yeates (Middlesex Hospital), Professor D. E. Derry (Cairo), and Mr. A. B. Nutt (Sheffield).

Mr. P. H. Mitchiner was elected an Examiner for the Primary Fellowship Examination.

Professor Kurt Thoma (U.S.A.) was appointed Charles Tomes Lecturer for 1949.

The Fellowship of the Faculty of Anaesthetists was granted to Dr. G. F. V. Anson (New Zealand).

The Begley Prize for Anatomy and Physiology was awarded to W. H. McBay (King's College, London).

The following hospitals were recognized under paragraph 23 of the Fellowship Regulations: East Grinstead—Queen Victoria Hospital (R.S.O.); Worthing—Worthing Hospital (R.S.O. and senior H.S. for six months only); Khartum and Omdurman—Civil Hospitals (surgical registrar to the two hospitals).

Diplomas

Diplomas in Public Health, in Tropical Medicine and Hygiene, in Ophthalmic Medicine and Surgery, in Child Health, in Physical Medicine, and in Medical Radio-Diagnosis were granted jointly with the Royal College of Physicians of London to the following successful candidates:

DIPLOMA IN PUBLIC HEALTH.—J. H. F. Norbury and Alexandrina M. M. Parker.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—M. H. M. Abdulcader, A. Z. Abduttam, P. B. Adamson, Doreen M. Bottone, W.-H. Chao, M. J. Colbourne, C. D. Desai, C. C. Draper, G. M. Edington, R. T. D. Emond, M. K. D. Hagopian, T. K. Howat, H. C. Jeffrey, V. V. Kalbian, S. F. Liu, M. F. McDowall, K. B. M. O. Megat, A. R. Mills, G. P. Mohanty, I. S. Mudie, E. J. D. Nariman, M. Ramu, V. G. Rao, R. G. Rowberg, A. B. Roy, E. Shirajian, G. Skinner, A. J. W. Spitz, C. Suarez, C. K. M. Thacker, A. H. Wahba, A. A. Zaki.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.—A. L. Alban, A. E. Barrett, G. T. Bedford, P. L. Blaxter, H. A. Bramwell, B. Brodkiewicz, A. N. Cameron, M. A. Carpenter, H.-H. Chang, D. P. Choyce, L. N. Deshmukh, B. K. Dhir, G. C. Gulati, Florence I. Henry, A. P. K. Homayouni, P. L. Kiewe, J. Levy, Kathleen M. Long, A. J. A. McCormick, F. E. McLaughlin, J. McMillan, G. P. Mann, V. A. F. Martin, S. B. Mukhopadhaya, D. P. North, Abina T. O'Connor, I. W. Payne, T. J. G. Price, S. A. Qadeer, T. J. Riegele, W. L. Robinson, C. M. Ruben, R. P. Sarda, M. D. Sengupta, W. A. M. Smith, I. B. Taylor, R. A. Trope, K. C. Wybar.

DIPLOMA IN CHILD HEALTH.—Unity R. Allen, M. Anderson, Mary V. Ashton, G. N. Barsden, Aleida E. M. M. R. Bisschop, Margaret E. M. Blanden, J. H. Boydell, D. L. Bridgewater, J. F. Britto, A. D. Brown, Elizabeth R. McF. Brown, Winifred C. M. Bulkeley, Sheila M. Burt, Alice M. Bush, C. D. Cassimos, Phoebe Charlton, H. M. T. Coles, Helen M. Connell, Dorothy J. Cooper, A. H. C. Couch, J. H. Coulson, D. H. Cownie, Margery N. Cummins, Joan P. D'Arcy, K. K. Datey, R. S. Dayal, Pauline M. Dean, T. Debney, M. Elyan, A. D. Fair, Margaret L. Fallon, Marie A. Favard, Elspeth M. Frith, Betty B. Glansfield, Jean F. Gordon, N. Gordon, Joan McE. Griffiths, Y. G. Gupte, G. J. H. L. Hall, A. G. Hesling, A. Hunter, W. N. Ingham, S. E. M. Jarvis, H. R. Jolly, Mary P. L. Karney, Barbara M. Killick, Alison B. King, Catherine M. R. Kirkpatrick, A. A. Lewis, H. W. Macintyre, Ma Po Po, P. L. Masters, R. M. Mayon-White, Brenda M. Mead, P. Micallef, Mok Hing Yiu, J. P. Mostyn, P. Nanavatty, Jean S. Isbister, D. N. Patel, D. T. Pitt, J. N. Pohowalla, Diana Powell-Cotton, T. M. Pritchard, Helen Rennie, Catherine P. Schofield, L. G. Scott, Joan N. Scragg, N. Sen, C. S. Shaw, K.-H. Siu, L. Solomon, R. Spielsinger, Maude Stevenson, T. K. Sundaram, W. P. Sweetnam, Alexandra Tobert, D. Q. Trounce, S. Wayburne, J. A. Waycott, L. R. Whittaker, Edith H. Williams, Alice E. Wilmot, Margaret Wilson.

DIPLOMA IN PHYSICAL MEDICINE.—J. W. Byrne, C. W. Coplans, H. R. Davies, H. J. Glanville, G. Savill.

DIPLOMA IN MEDICAL RADIO-DIAGNOSIS.—W. Stachurko.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The following candidates have been awarded the Diploma in Obstetrics of the College:

P. Allebone, Margaret Bagshaw, U. C. Bardolai, E. L. Barr, Aileen V. Barrett, W. A. Benson, Kathleen N. Berger, S. W. Beswick, G. F. Bigwood, P. M. Brett, D. M. Brodie, Margaret Brodigan, G. H. Burgess, Elizabeth B. Butler, Rachel Cameron, K. G. Casey, Jean Cleghorn, W. W. Coppinger, A. C. Coulthard, J. K. Craig, S. Dalziel, J. A. R. Debenham, D. S. Desai, G. Dison, Janet McK. Donald, Freyda F. Dougall, R. W. Drewer, Mary E. Egan, T. H. Eustace, Marjory F. Foyle, R. L. Gadd, J. E. Gilbert, Philippa A. Glyn, Beryl J. Goff, L. Goodman, G. E. L. Graham, E. P. Griffiths, W. Gross, H. Hanson, J. G. Harrison, A. P. B. Harston, Vivien P. Helme, M. J. T. Hewetson, Mary Higgs, Agnes M. Highet, T. R. Hunt, Rachel Jacobs, S. T. James, C. M. Jones, N. M. Jones, D. H. Joseph, S. Kanapathippillai, C. H. Kaye, Katie Keane, Katherine M. Kelly, H. A. Kent, R. F. Kingston, A. I. I. Klopper, H. J. Knight, G. W. Korn, G. D. Lees, Lillian J. Letty, J. C. S. Leverton, M. G. H. Lewis, G. H. Lloyd, H. J. Love, Jessie B. Macaulay, A. MacLellan, R. L. Macpherson, D. Magner, A. Mathew, Mary I. Milne, M. Mirchandani, Catherine H. Mitchell, Ll. O. Morgan, Monica M. A. Murphy, Barbara J. Nathan, Ll. M. Norburn, Susan B. G. Ofori-Atta, H. O'Hara, N. L. Owen, Ethel W. W. Owston, T.-C. Pang, W. M. Patterson, Pauline M. Philpott, G. D. Pinker, Jessie McA. Pope, B. Pownall, D. B. Price, D. Puflett, E. Quehl, Mairead M. Robinson, O. Rosensweig, W. I. Russell, Margaret M. P. Ryan, Jean M. Sandel, Eileen P. Scanlan, R. D. Simpson, J. M. Slattery F. G. M. Smith, J. S. Smith, Roberta A. Stewart, R. J. Still, K. S. Subbalakshmi, H. P. Tarnesby, J. S. Taylor, Alice P. Thomas, Glenys M. Thomas, T. A. Thompson, H. S. Trafford, Doreen G. Warnock, J. L. Warren, P. F. A. Watkins, N. E. Wood.

Medical Notes in Parliament

Hospital Endowments Commission

The Secretary of State for Scotland announced on April 14 that Professor Sir Sydney Smith, dean of the Faculty of Medicine at Edinburgh University, had been appointed chairman of the Hospital Endowments Commission. Dr. A. Greig Anderson, of Aberdeen, who is a member of the North-Eastern Regional Hospital Board, is the only medical member. The Hospital Endowments Commission is a purely Scottish body. There is no corresponding body under the National Health Service in England and Wales.

Clinical Details Confidential

Mr. JOHN LEWIS reported on April 14 that the senior administrative medical officer of the Manchester Regional Hospital Board had advised the secretary of the Bolton Hospital Management Committee that if medical officers of health asked for information about patients discharged from hospital and in need of aftercare only the address need be given.

Mr. BEVAN replied that the Board had encouraged management committees to co-operate fully with local authorities, but had rightly advised them not to disclose to them clinical details of patients, which should generally be treated as confidential.

On the same date Mr. LEWIS further asked whether Mr. Bevan knew that the senior administrative medical officer of the Manchester Regional Hospital Board had instructed medical officers at venereal disease clinics in the area that information about patients attending the clinics should not be disclosed to medical officers of health, even if requested for purposes of contact tracing. Mr. Lewis said that medical officers of health in all parts of the country had always had free access to information about patients.

Mr. BEVAN answered that the Regional Hospital Board had rightly taken this step to ensure that the statutory regulation about the secrecy of V.D. treatment was scrupulously observed.

Private Practice

On April 14 Dr. SEGAL asked whether Mr. Bevan was aware that medical practices were still advertised by private agencies for sale and purchase, and what steps he proposed to take to put an end to this practice. He further asked if Mr. Bevan could make arrangements to establish official agencies for the transfer of medical practices, partnerships, and assistantships.

Mr. BEVAN said there was no prohibition on the sale and purchase of purely private practices. He saw no objection to such transactions being handled by private agencies. The transfer of practices and the introduction of new partners and assistants in the National Health Service were already controlled by the appropriate official bodies.

Industrial Injuries: Special Hardship Allowance.—The Minister of National Insurance, Mr. JAMES GRIFFITHS, has laid before Parliament regulations which enable the special hardship allowance provided under the National Insurance (Industrial Injuries) Act to be paid with industrial disablement gratuities whatever the period for which the disablement has been assessed. The new regulations came into operation on April 13. Previously the allowance could only be paid with a disablement gratuity based on an assessment of disablement for a period of over two years. This special hardship allowance is an allowance of up to 20s. a week which can be paid with an industrial disablement pension or gratuity if the disabled man or woman is unable to return to his regular occupation and cannot work at a job of a similar standard.

Vaccination.—Mr. BOSSOM inquired on April 14 what was the approximate proportion of the population now vaccinated as compared with that which was immunized against smallpox before the last war. Mr. BEVAN answered that records were available, up to 1946 at present, only on infant vaccination. These showed that about 42% of children born in 1946 were vaccinated in infancy as against about 34% in 1938.

The Samuel Kress Foundation has given about £2,000,000 to the New York University Bellevue Medical Centre for the development of postgraduate medical education on a national and international scale. The Kress Foundation stated: "Privately financed medical education is more effective, more economical, and more in keeping with the essential tradition of American democracy, now subject to a radical challenge in our country and throughout the world, than Government-financed medical education." Mr. Kress is the founder of a chain of stores.

EPIDEMIOLOGICAL NOTES

Smallpox

The period of surveillance of passengers and crew of the s.s. *Mooltan* ended on April 19. The total of confirmed cases of smallpox arising from the first fatal case on board is 11. Four of the fatal cases were in persons who were unvaccinated at the time of infection, the fifth being a man of 61 who was vaccinated in infancy. In other cases there is evidence that vaccination has produced considerable modification of the disease, and this has sometimes given rise to difficulty in diagnosis. It is advisable that all contacts showing doubtful lesions should be isolated for observation and bacteriological examination. Contacts with such signs have been admitted to hospital from Southwark, Sutton and Cheam, Romford, St. Pancras, and West Ham. Up to April 25 there has been no confirmation of the diagnosis of smallpox in any person who was not on board the s.s. *Mooltan*. Further clinical observation and laboratory investigation have removed any suspicion that the two patients in Laceby Smallpox Hospital mentioned last week (April 23, p. 732) are suffering from smallpox.

Influenza

The number of deaths provisionally ascribed to influenza in the 126 great towns in the week ended April 16 was 95, compared with 192 in the preceding week. The peak figure of 360 deaths was reached in the week ended March 19, and since then there has been a fairly rapid decline. Notifications of acute primary and influenzal pneumonia reached a peak of 918 cases in the week ended March 12 and have since declined to 522 in the week ended April 9.

No further reports of outbreaks have been received recently, and it would appear that the outbreak of virus influenza is now over. It was characterized by a high incidence in the Midlands and North, with, however, a low fatality rate. In several outbreaks a strain of virus A nearly related to the strain isolated in this country in 1947 was found. There were also a few isolations of virus B from outbreaks in semiclosed communities.

First Quarter of 1949

The number of stillbirths registered in England and Wales during the first quarter of 1949 was 4,418, giving a rate of 23.1 per 1,000 total live and still births, the lowest rate ever recorded for a March quarter in this country. For the same period a year ago the rate was 24.3, and there has now been a progressive fall in the rate for the first quarter for the past nine years.

The number of deaths of children under 1 year of age was 7,462, representing a record low rate of 40 per 1,000 related live births. This compares with the previous record of 41 in the corresponding quarter a year ago and 55 in the March quarter of 1947.

There was again a fall in the number of live births registered in England and Wales. For the March quarter of 1949 the figure was 186,561 compared with 202,184 in the March quarter, 1948, and 241,530 in the first quarter of 1947. The corresponding rates per 1,000 total population were 17.4, 18.7, and 22.8, respectively. In the following table the numbers of live births, stillbirths, total deaths, and deaths of infants under 1 year of age registered in the March quarter, 1949, and the corresponding rates, are compared with those for the March quarters 1948, 1947, and 1938.

	Live Births		Stillbirths		Deaths (including Non-civilians)		Deaths of Infants under 1 Year	
	Number	Per 1,000 Total Population	Number	Per 1,000 Total Live and Still Births	Number	Per 1,000 Total Population	Number	Per 1,000 Related Live Births
1st Q'rter, 1949	186,561	17·4	4,418	23·1	161,279	15·0	7,462	40
" " 1948	202,184	18·7	5,043	24·3	132,705	12·3	8,358	41
" " 1947	241,530	22·8	6,347	25·6	181,736	17·1	12,561	55
" " 1938	155,187	15·3	6,185	38·3	137,897	13·6	10,585	69

Discussion of Table

In *England and Wales* infectious diseases were less prevalent during the week. There were decreases in the notifications of measles 1,095, acute pneumonia 388, whooping-cough 390, and scarlet fever 66.

The largest decreases in the notifications of measles were Yorkshire West Riding 326, Middlesex 240, Essex 223, Staffordshire 177, Surrey 171, Lancashire 164, and Glamorganshire 101; the largest increases were London 266, Derbyshire 134, Warwickshire 101, and Hertfordshire 76. In most areas the incidence of whooping-cough was unchanged, the decline being due to the experience of a few counties, notably Lancashire 101, Kent 79, and London 76.

There were decreases in the notifications of scarlet fever in Essex 31 and London 22. The chief feature of the returns for diphtheria was an increase of 9 in the notifications in Durham. The decrease in the incidence of acute pneumonia was general throughout the country.

An outbreak of dysentery affecting 10 persons was notified in Norfolk, Norwich C.B.; other large returns were London 11, Yorkshire West Riding 11, and Lancashire 10.

In *Scotland* a decrease was recorded in the notifications of whooping-cough 54, measles 10, and diphtheria 9. There was an increase in the incidence of acute primary pneumonia 23. Of the 23 cases of dysentery 20 were notified in Glasgow.

In *Eire* there were increases in the incidence of measles 40 and scarlet fever 28, and a decrease of 10 was recorded in the notifications of whooping-cough. Notifications of diarrhoea and enteritis in Dublin C.B. were 10 fewer than in the preceding week.

In *Northern Ireland* increases were reported in the notifications of measles 42 and whooping-cough 40. The largest increases in the incidence of measles were in County Down 24 and County Tyrone 21. A rise of 25 in the notifications of whooping-cough was also recorded in County Down.

Corrected Notifications

Corrected notifications have been given in the quarterly reports of the Registrar-General since the June quarter of 1944. These show, except in the case of diphtheria, that the proportion of diagnostic errors has remained fairly constant over this period. In the notifications of diphtheria, however, there has been a continuous increase in the proportion of errors. Corrected notifications amounted to three-quarters of the original notifications in 1944, but to only two-fifths at the end of 1948. Of the other common infectious diseases of childhood, measles and whooping-cough have a negligible diagnostic error and scarlet fever an error of about 2%. The corrected notifications of cerebrospinal fever recorded as a percentage of the original notifications ranged from 53.6 to 84.5 during the period. During the epidemic of acute poliomyelitis in the third quarter of 1947 there was an error of 20% in the notifications, which increased to 30% in the second quarter of 1948.

Corrected Notifications Expressed as a Percentage of the Original Notifications

Year	Qtr.	Scarlet Fever	Diphtheria	Enteric fever (Typhoid and Paratyphoid)	Acute Pneumonia	Dysentery	Cerebrospinal Fever	Measles	Whooping-cough	Acute Poliomyelitis
1944	2	97·3	76·2	78·4	99·7	97·1	77·6	99·2	99·8	94·0
	3	98·1	77·0	83·0	99·6	98·1	74·7	99·9	100·0	95·8
	4	98·4	75·9	84·6	100·0	98·1	72·1	100·1	99·9	95·3
1945	1	97·7	74·7	83·0	99·9	99·8	82·7	100·1	99·4	83·9
	2	97·8	73·3	73·5	99·8	97·8	73·1	99·9	99·9	95·6
	3	97·9	72·5	80·7	100·1	93·4	66·6	99·8	99·7	96·4
	4	98·3	74·1	77·2	99·9	95·6	73·2	99·1	99·6	94·6
1946	1	97·8	70·7	87·8	99·9	97·2	84·5	100·0	99·7	79·8
	2	96·8	64·6	68·6	100·0	93·3	76·8	99·9	99·7	85·6
	3	97·2	61·0	89·9	99·1	87·4	64·6	99·8	99·8	90·3
	4	98·1	62·8	88·9	99·9	85·5	67·0	100·0	99·4	92·5
1947	1	97·3	58·7	76·0	99·4	91·3	81·2	100·0	99·6	88·7
	2	96·1	53·8	75·3	99·5	92·0	76·6	99·9	99·8	91·0
	3	97·5	50·9	84·9	99·4	86·4	58·8	99·7	99·6	81·8
	4	98·3	50·6	82·4	99·7	93·8	64·6	99·8	99·5	83·1
1948	1	98·1	50·5	75·2	99·5	94·5	64·1	99·9	99·5	72·1
	2	97·9	44·7	77·0	99·3	91·9	54·8	100·0	99·8	70·2
	3	97·6	40·4	81·3	99·7	92·2	53·6	100·2	99·9	85·9
	4	98·2	42·0	84·6	99·8	91·6	69·3	100·0	99·2	86·3

Week Ending April 16

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,039, whooping-cough 2,267, diphtheria 103, measles 13,066, acute pneumonia 731, cerebrospinal fever 27, acute poliomyelitis 5, dysentery 49, smallpox 7, paratyphoid 1, and typhoid 2.

No. 14

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 9.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1949 (a)	1949 (b)	1949 (c)	1949 (d)	1949 (e)	1948 (Corresponding Week) (a)	1948 (b)	1948 (c)	1948 (d)	1948 (e)
Cerebrospinal fever	39	4	21	5	1	36	2	19	6	—
Deaths		2	1				—	—		
Diphtheria	106	11	19	3	4	155	15	48	14	10
Deaths	—	—	—	—	—	4	—	—	—	—
Dysentery	63	11	23	1	—	111	18	50	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	3	—	1	—	—	—	—	1	—	—
Deaths		—					1			
Erysipelas			25	10	6			43	7	8
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				43					30	
Deaths	25	1	4	2	3	48	5	6	1	1
Measles*	14,724	1753	386	194	193	11,193	1809	445	130	44
Deaths†			1	1	—			2	1	—
Ophthalmia neonatorum	56	6	11	—	—	65	7	16	—	—
Deaths										
Paratyphoid fever	5	—	—	—	—	3	—	1(B)	2(B)	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	1,093	31	16	17	9	703	45	6	11	1
Deaths (from influenza)‡	192	5	5	—	2	9	—	1	1	—
Pneumonia, primary			233	46				226	44	
Deaths	296	34		9	11	207	35		10	11
Polio-encephalitis, acute	—	—				2	—			
Deaths										
Poliomyelitis, acute	14	3	—	—	1	14	—	3	1	—
Deaths§	—	—				2	—			
Puerperal fever		—	5				1	9		—
Deaths										
Puerperal pyrexia‖	96	11	6	1	2	135	8	8	—	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,191	65	193	108	38	1,196	79	238	28	34
Deaths†			—	—	—			—	—	—
Smallpox	4	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	1	—	1	1	—	7	1	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,608	171	222	111	104	3,303	231	45	35	24
Deaths	16	1	3	4	—	14	2	1	—	1
Deaths (0–1 year)	300	43	36	26	7	349	45	46	23	12
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,778	781	610	200	133	4,853	741	589	189	130
Annual death rate (per 1,000 persons living)			12·2	12·4				11·9	11·8	
Live births	7,672	1199	940	329	200	8,752	1460	1020	482	293
Annual rate per 1,000 persons living			18·9	20·4				20·6	30·2	
Stillbirths	183	27	32			226	30	38		
Rate per 1,000 total births (including stillborn)			33					36		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales, Eire, and Northern Ireland.

Medical News

British Journal of Urology

The *British Journal of Urology* celebrates its coming-of-age with important editorial changes. Mr. H. P. Winsbury-White, who had edited the journal since its beginning in 1929, at first in collaboration with the late Frank Kidd and later with the assistance of Mr. A. E. Roche, has retired from the editorial chair to become consulting editor. Mr. David Band will in future edit the journal, assisted by Mr. J. D. Fergusson and Mr. N. M. Matheson, and supported by an editorial committee drawn from all parts of the Commonwealth. The journal will in future by published by Messrs. E. and S. Livingstone, of Edinburgh, and will include original papers from urologists in Britain and the Commonwealth. The issue of the journal for March, 1949, which appears under this new regime, incorporates several improvements in style, with a very high standard of production. The valuable abstracts from current literature and the index of current urological literature appear as usual. The British Association of Urological Surgeons, which was formed in 1945, adopted the *British Journal of Urology* as its official publication in 1946, and its support should assure the future of the journal. British urologists owe a debt of gratitude to Mr. Winsbury-White for his most able editorship for a period of 20 years, as also to Mr. Roche, who has assisted him for the past 15 years.

National Formulary

The *National Formulary* comes into operation on May 1. The Ministry of Health is anxious that the use of the *N.W.F.* and the pre-war edition of the *N.F.* should be discontinued. The use of old titles which differ from those in the new *N.F.* will inconvenience the chemist and may necessitate reference back to the doctor. It will be a help if all formulae which are not *B.P.*, *B.P.C.*, or *N.F.* are written out in full by the prescriber. Where a formulary preparation is being prescribed the new *N.F.* should be used. No formula for linctus diamorphinae is included in the new *National Formulary*. From May 1, a prescription for linctus diamorphinae *N.W.F.* described by title does not meet the requirements of the regulations under the Dangerous Drugs Acts, and where the preparation of the *N.W.F.* is required the formula must be written out in full. The Ministry of Health has announced that, in agreement with the medical profession, where linctus diamorphinae or linctus diamorphinae *N.W.F.* is prescribed by title the new linctus diamorphinae of the *B.P.C.* will be dispensed.

New Radiographic Department at Queen Square

The chairman of the National Hospital gave a dinner on April 5 at the Staff Residence in celebration of the opening of a new radiographic department on the third floor of the building in Queen Square. Among the guests were Dr. S. Cochrane Shanks, consultant adviser in radiology to the Ministry of Health, and Dr. Cecil Teall, President of the Faculty of Radiologists. In a speech after dinner, Dr. Erik Lindgren paid tribute to Dr. Erik Lysholm, of Stockholm, the celebrated neuro-radiologist, who planned and designed the layout of the new radiographic floor. "His tragic death a few weeks after the plans were finished," he said, "robbed medical science of one of its outstanding figures." Dr. Lindgren succeeded Dr. Lysholm as head of the Radiological Department at the Seraphimer Hospital in Stockholm and assisted him in the design of the National Hospital's new department. In thanking all who helped in bringing the scheme to fruition Dr. Hugh Davies, President of the British Institute of Radiology and radiologist to the National Hospital, paid a special tribute to Mr. Shönander, who co-operated with Dr. Lysolm in the manufacture of skull table apparatus. He supplied four, as requested, but would accept payment for only three. He presented the fourth to the National Hospital in memory of his great friend, Dr. Lysholm.

COMING EVENTS

Edinburgh Lectures

In connexion with the postgraduate courses in medicine and surgery a series of open lectures on subjects of wide biological interest will be given during the summer term in the Anatomy Lecture Theatre, University New Buildings, Edinburgh. The first lecture was given by Sir James Learmonth on April 19, on "Reflections on Portal Hypertension." Details of the remaining lectures to be given on May 3, 17, and 31 and June 7 and 21 will be published in the diary column of the *Journal* week by week. All graduates and students are invited to attend the lectures.

Tropical Medicine Course at McGill

A course for the Diploma in Tropical Medicine and Hygiene at McGill University will start in October. Applications should be received by June 1 by the Dean of the Faculty of Medicine, McGill University, Montreal, P.Q., Canada.

Hospital Administrators

The Annual Conference of the Institute of Hospital Administrators will be held at Southport on May 6–7. Papers to be read include "Administrative Problems of the Hospital Service" and "Hospital Development—Present and Future." Information may be obtained from the Secretary of the Institute at Tavistock House North, Tavistock Square, London, W.C.1.

Marriage Guidance Conference

The National Marriage Council will hold a conference, a counsellors' training course, and the annual general meeting at the Esplanade Hotel, Belmont Road, Scarborough on May 14–21. Subjects to be discussed at the conference include sex education, the divorce law, and artificial insemination. Particulars may be obtained from the Conference Secretary, National Marriage Guidance Council, 78, Duke Street, Grosvenor Square, London, W.1.

Hospital Chaplains' Conference

The Annual Conference of the Church of England Hospital Chaplains' Fellowship will be held at St. Edward's House, 22, Great College Street, Westminster, S.W.1, on May 17–18. Clergy doing hospital work will be welcome whether they are members of the Fellowship or not. Information may be obtained from the Rev. J. Gordon Cox, Horton Hospital, Epsom, Surrey.

West London Medico-Chirurgical Society

The annual banquet of the West London Medico-Chirurgical Society will be held at the Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C., on Wednesday, May 18, at 7.30 p.m. for 8 p.m. The Triennial Gold Medal will be presented by Lord Moran to Professor R. A. McCance, F.R.S., Professor of Experimental Medicine, University of Cambridge. The Right Hon. Sir Norman Birkett, P.C., and the Right Hon. the Lord Burghley will also speak.

Conference of M.Os.H.

The County Borough Group of the Society of Medical Officers of Health will hold their annual meeting and conference under the presidency of Dr. R. M. Galloway (Bolton) at "Low Wood," Windermere, on May 6–9. The programme includes talks on "The Working of the National Health Service Act, 1946," by Drs. C. Metcalfe Brown and John A. Guy; on maternity and child welfare; by Mrs. Baker, formerly Matron of St. Mary's Hospital, Manchester; on "Mental Health Service Responsibilities of Part III Authorities under the National Health Service Act, 1946," by Dr. W. Rees Thomas, Ministry of Health; on "The Care of the Deaf in the Community," by Drs. A. W. G. and Irene Ewing; on "The Training of Health Visitors," by Professor I. G. Davies; and on "Medicine—Social and Anti-social—in West Africa," by Professor Andrew Topping. The honorary secretary is Dr. J. Greenwood Wilson, of Cardiff.

Professor J. C. Spence

Professor J. C. Spence, Nuffield Professor of Child Health at Newcastle-upon-Tyne, has been appointed by the President and Fellows of Harvard College as Cutter Lecturer in Preventive Medicine for 1948–9, and will visit Boston to deliver the lecture on May 11. He will serve also as Visiting Physician-in-Chief for a week to the Boston Children's Hospital, and then travel to Canada to deliver the Blackader Lecture in the general session at the Annual Meeting of the Canadian Medical Association in Saskatoon.

Charities Ball

A Charities Ball organized by the Metropolitan Counties Branch of the B.M.A. will be held at B.M.A. House, Tavistock Square, London, W.C.1, on Thursday, May 26, at 8 p.m. for 8.30 p.m. The proceeds will be devoted to medical charities in urgent need of support. Patrons include the President of the Association and the Presidents of the three Royal Colleges. There will also be a cabaret and facilities for bridge. The cost of tickets including a buffet supper is two guineas each. Applications should be sent to the Secretary, the Charities Ball Committee, Metropolitan Counties Branch, B.M.A. House. Contributions to charities from those unable to attend the ball would also be most welcome and should be sent to the same address.

SOCIETIES AND LECTURES

Monday

EDINBURGH UNIVERSITY.—At Physiology Lecture Theatre, University New Buildings, Teviot Place, Edinburgh, May 2, 5 p.m., *"The Value of History in Medicine,"* by Dr. Douglas Guthrie.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., May 2, 5 p.m., *"Congenital Defects of the Kidney and Ureter,"* by Mr. J. G. Sandrey.

LONDON: UNIVERSITY COLLEGE.—At Physiology Theatre, Gower Street, W.C., May 2, 4.45 p.m., *"Selective Toxicity with Special Reference to Chemotherapy,"* by Professor Adrien Albert.

Tuesday

EDINBURGH POSTGRADUATE BOARD FOR MEDICINE.—At Anatomy Lecture Theatre, University New Buildings, May 3, 5 p.m., "*Anticoagulant Therapy*," by Professor H. W. Fullerton.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—May 3, 5 p.m., "*Psoriasiform Eruptions*," by Dr. F. R. Bettley.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., May 3, (1) 11 a.m., "*Neurosyphilis*," by Dr. H. Nicol; (2) 5 p.m., "*Injuries of the Kidney and Ureter*," by Mr. A. W. Badenoch.

LONDON UNIVERSITY.—At London School of Economics and Political Science, Houghton Street, Aldwych, W.C., May 3, 5 p.m., "*The National Health Service*," by Sir James S. Ross (Ministry of Health).

LONDON: UNIVERSITY COLLEGE.—At Physiology Theatre, Gower Street, W.C., May 3, 5.15 p.m., "*Physiological Properties of Ethyl Alcohol*," by Dr. M. Grace Eggleton.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.—May 3, 5 p.m., "*Malaria with Special Reference to Recent Experimental Clinical and Chemotherapeutic Investigations*," Croonian Lecture by Dr. N. Hamilton-Fairley, F.R.S.

WRIGHT-FLEMING INSTITUTE OF MICROBIOLOGY, St. Mary's Hospital Medical School, Paddington, W.—May 3, 5 p.m., "*Surface Properties of Bacteria*," by Professor E. W. Rideal, F.R.S.

Wednesday

GLASGOW UNIVERSITY: DEPARTMENT OF OPHTHALMOLOGY.—May 4, 8 p.m., "*European Vacation*," by Professor W. J. B. Riddell.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., May 4, (1) 11 a.m., "*Syphilis of the Skeletal System*," by Dr. W. N. Mascall; (2) 5 p.m., "*Hydronephrosis*," by Mr. H. P. Winsbury-White.

LONDON COUNTY MEDICAL SOCIETY.—At Bethnal Green Hospital, London, E., in conjunction with St. Leonard's Hospital, May 4, 4 p.m., clinical meeting.

Thursday

EDINBURGH UNIVERSITY.—At Anatomy Theatre, University New Buildings, Teviot Place, May 5, 5 p.m., "*Developments in the Surgery of the Labyrinth*," Honyman Gillespie Lecture by Dr. A. Brownlie Smith.

FACULTY OF HOMOEOPATHY.—At Royal London Homoeopathic Hospital, Great Ormond Street, London, W.C., May 5, "*Homoeopathy and General Practice*," by Dr. O. E. Manasse.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—May 5, 5 p.m., "*Physio- and Electro-therapy*," by Dr. R. T. Brain.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, London, W.C.—May 5, 5.15 p.m., "*The Surgical Treatment of Otosclerosis*," by Dr. I. Simson Hall.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., May 5, (1) 11 a.m., "*Syphilis in Pregnancy*," by Dr. W. N. Mascall; (2) 5 p.m., "*Anaesthesia in Urology*," by Dr. T. A. B. Harris.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.—May 5, 5 p.m., "*Malaria, with Special Reference to Recent Experimental Clinical and Chemotherapeutic Investigations*," Croonian Lecture by Dr. N. Hamilton Fairley, F.R.S.

ROYAL PHOTOGRAPHIC SOCIETY: MEDICAL GROUP, 16, Prince's Gate, London, S.W.—May 5, 7 p.m., "*The Future of Medical Photography*," by Dr. R. G. W. Ollerenshaw.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—May 5, 4.30 p.m., "*Neurology*," lecture-demonstration by Dr. D. J. Williams.

Saturday

BIOCHEMICAL SOCIETY.—At Department of Biochemistry, University Museum, Oxford, May 7, 1 p.m., 276th meeting.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, London, W.C.—May 7, 11.30 a.m., "*The Rehabilitation of the Deaf*," by S. R. Silverman, Ph.D.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Archibald.—On April 11, 1949, at 119, Moss Road, Northwich, to May, wife of Dr. R. McL. Archibald, a daughter.

Davis.—On April 6, 1949, in London, to Renate (née Loeser), M.B., B.S., wife of Albert Davis, F.R.C.S., a son.

MARRIAGE

Stilley—Baxter.—On April 16, 1949, at Dunfermline Abbey, Dunfermline, Scotland, George P. Stilley, M.A., L.R.C.P.&S.Ed., D.T.M.&H.Ed., Major R.A.M.C., M.E.L.F., and Miss Dores Baxter, M.B., Ch.B.Ed.

DEATHS

Barker.—On April 20, 1949, Chesman Barker, M.B., of Fair Haven, 9, Pevensey Road, Worthing, aged 80.

Bone.—On April 14, 1949, at the Luton and Dunstable Hospital, John Wardle Bone, LL.D., M.B., C.M.Ed., of Rookwood, Luton, aged 79.

Currie.—On April 13, 1949, at 40, Inverleith Place, Edinburgh, John Ronald Currie, M.D., LL.D., D.P.H., F.R.C.P.Ed., Emeritus Professor of Public Health, University of Glasgow.

Correction.—Relying on a press report which we now know to be inaccurate, we erred in recording in our issue of April 16 (p. 688) the death of Dr. William Thomas Baker. In hastening to correct the error we very much regret any distress that this may have caused Dr. and Mrs. W. T. Baker.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Vitamin D and the Skin

Q.—*Is it possible to say how much ergosterol is present in the skin, and how much vitamin D is produced after exposure to natural or artificial ultra-violet light? Does the ergosterol in the skin play any major part in contributing to vitamin-D metabolism?*

A.—Only traces of ergosterol occur in the skin. It forms about 0.5% of skin sterols, the most important of which are cholesterol and 7-dehydrocholesterol. It is the latter, and not ergosterol, which provides the vitamin D produced by irradiation of the skin—that is, vitamin D_3. It is not possible to say how much vitamin D is produced by exposure of the skin sterols to natural or artificial ultra-violet light, because the amount formed depends, among other things, on the quantity of sebum secreted, the time of exposure, and the concentration of the light rays. It is known, however, that rickets can be both prevented and cured by exposing the skin to ultra-violet irradiation without vitamin D being taken by mouth. Vitamin D appears to be formed by irradiation on the surface of the skin rather than in it, because if the sebum is removed from the skin surface little or no vitamin D is formed.

"Bat" Ears

Q.—*What are the latest views on the treatment of "jumbo" ears (winged pinna)? What operation is performed, and is it wise to correct one ear at a time?*

A.—"Jumbo" ears presumably means what are more commonly called "bat" ears. These should be reduced and set back in the proper position by means of careful excision of the ear cartilage and of the skin posteriorly. Both ears are done at once. The operation is far from easy and is best undertaken by an experienced plastic surgeon. The difficulty is, of course, to get the ears evenly placed; even more troublesome is the question of reducing each one in size, for they are usually hypertrophied.

Feeding Difficulties in a Small Child

Q.—*What is the best treatment for a child with persistent anorexia? I have in mind a girl aged 4 whose two brothers are at boarding-school, so that for most of the time she is virtually an only child. She shows very little interest in food. She is active and has a lively imagination, but because she is thin and does not gain weight her parents are naturally anxious. They avoid pushing food into her because this results only in vomiting or regurgitation, and they feel that there is a danger of inducing a permanent dislike of certain foods, as happened in the case of one of the parents. The child does not ask for food between meals, and eats few sweets. The standard text-book advice to offer food, and to remove it unconcernedly and without comment if not eaten, appears to be a counsel of perfection, for if this is done she would have no meals. At children's parties the example of other children leaves her unmoved.*

A.—It is misleading to consider the symptom of anorexia in isolation. As in adult life worry leads to loss of appetite and digestive disturbances, so in childhood any persistent lack of emotional ease is likely to be reflected in feeding difficulties. Factors affecting a child of 4 lie almost certainly in the home background, and especially in the mother-child relationship. It is significant not only that the parents are anxious about the child's lack of appetite but that this anxiety about food in one parent goes back to childhood and is now reflected upon this youngest child and only girl. It is highly probable that from early infancy parental over-anxiety about feeding has sensitized her to go off her food whenever she is herself anxious. In the absence of her brothers it may be that too much emotional

response is demanded from her; her activity may be the hyperactivity commonly reactive to such a demand. Remedies should be directed to reducing the parents' disturbance by every means possible, and to ending the "only child" position by the companionship of other children in a nursery school or similar group, preferably one where meals are provided. At home the routine of meals should be changed to provide novelty of setting, time, and food, and the "Do-eat-to-please-Mummy" attitude strictly avoided. If these measures are tried without success a child-psychiatrist should be consulted.

Blood-pressure Readings at Altitude

Q.—*How does elevation above sea-level influence the readings of a sphygmomanometer of the Baumanometer type? Is there any formula by which the readings could be reduced to sea-level values in a locality at a considerably higher altitude?*

A.—The only effect of altitude on the readings of mercury sphygmomanometers is that due to the decrease in the value of gravity with altitude. At altitudes up to about 10,000 ft. (3,000 m.) this effect is negligible in comparison with the accuracy obtainable from ordinary sphygmomanometers. Instruments of the aneroid type are unaffected by this change in gravity.

It is useful to keep in mind the distinction between "blood pressure" and "the absolute pressure of the blood." "Blood pressure" as recorded by a sphygmomanometer is the amount by which the "absolute pressure of the blood" exceeds the ambient atmospheric pressure. Since atmospheric pressure varies with altitude, roughly by 25 mm. of mercury per 1,000 ft. (300 m.), and also changes from day to day, it follows that the "absolute blood pressure" may vary considerably although the observed "blood pressure" may remain constant. This statement is based on the assumption that the pressure on the sphygmomanometer—that is, the pressure in the sleeve applied to the patient—does represent the "absolute pressure of the blood."

Parity and Uterine Cancer

Q.—*Is cancer of the uterus more common in women who have borne many children than in women who have had few or no children?*

A.—Married women are more likely to die from cancer of the uterus than single women, but it is not possible, from official statistics, to determine whether the risk increases with the number of children the women have borne, since data are not available. The following compares the death rates per million among single and married women:

Age Group	1911–20		1930–2	
	Single Women	Married, Widowed, or Divorced	Single Women	Married, Widowed, or Divorced
25– ..	14	49	12	39
35– ..	89	259	85	215
45– ..	296	628	220	473
55– ..	537	864	405	654
65– ..	608	932	522	817
75+ ..	709	811	626	856

The improvement during this period in the married women's mortality cannot be attributed to the declining birth rate, since the mortality of single women improved, relatively, at the same rate as that for married women.

Concretion Obstructing Milk Duct

Q.—*A healthy woman aged 29 had been lactating normally for five months, when a swelling developed in the upper and outer part of the left breast due, apparently, to distension of one of the lobules. It was relieved after about 24 hours by expressing from the nipple a shiny white rubbery concretion 1 mm. in diameter; during massage of the nipple this object shot out, and was followed by a profuse discharge of milk from the affected duct. The obstruction occurred almost daily for the next two months, affecting always the same duct. On some days as many as a dozen concretions would be expressed. At no time did infection arise, although the engorgement was often prolonged and painful. The duct has now given no trouble for several weeks. Lactation was normal after a previous pregnancy. What are the pathology and significance of the condition?*

A.—The condition described is clearly one of milk engorgement of a lobule of the breast secondary to an obstruction of the main duct. The unusual features about the case are, first, the development of the trouble so late in lactation (it usually occurs in the earlier weeks), and, secondly, the character of the obstructing agent. The commonest causes of obstruction to a breast duct are either inspissated milk or a keratin plug at the skin orifice. White rubbery concretions must be an exceedingly rare cause of duct obstruction. The presumption is that they were derived either from inspissated milk or from a keratin plug. In view of the fact that the duct has now given no trouble for several weeks, and of the normal lactation after the previous pregnancy, it would be reasonable to hope that a subsequent lactation would be normal.

Sterilizing Syringes for Procaine Penicillin

Q.—*The instructions for giving procaine penicillin specify the need for a dry sterile syringe and needle. How could this best be obtained under busy general-practice conditions?*

A.—The oily preparation of procaine penicillin should not be mixed with water, which may dissolve out some of the penicillin; a dry syringe is therefore recommended for injection. For the general practitioner the syringe may be sterilized by boiling in the evening, and after assembly placed in a sterile glass tube of such a diameter that the flange of the syringe rests on the top of the tube. The syringe is then secured by a piece of adhesive cellulose or Scotch tape. Needles are similarly sterilized, and can be left in small sterilized plugged test-tubes with the mount resting on the bottom of the tube. During the day the syringe, provided it is used only for injections of penicillin, need not be re-sterilized, but a fresh sterile needle must be used for each injection. For further advice about the sterilization of syringes the Medical Research Council Memorandum No. 15, issued by H.M.S.O. (price 4d.), may be consulted.

Proctalgia Fugax

Q.—*Could you give me the latest information on the aetiology, course, prognosis, and treatment of proctalgia fugax?*

A.—By proctalgia fugax is meant a pain, located in the rectum, occurring in attacks which last from a few minutes to an hour and often make their appearance at night. The symptom is without organic basis, and, because it commonly attacks middle-aged tired, overworked, and over-anxious men, many doctors are among its victims. It has been described as a "visceral neurosis," but the pain must arise in some neuromuscular disturbance in the rectal wall, because many sufferers have found that distension of the rectum relieves it instantly. The symptom will often recur during periods of anxiety or emotional stress. General measures aimed at control of the factors noted are the basis of treatment. It is important to maintain a regular bowel habit. Sedatives may ensure an undisturbed night in minor cases; many sufferers are forced to use some local means of relieving the pain, such as distension of the rectum with air or saline by a Higginson's syringe. Sometimes a glycerin suppository is effective.

Indications for Thyroidectomy

Q.—*Is thyroidectomy ever called for in the absence of symptoms of thyrotoxicosis? A married woman aged 41, not yet at the menopause, has for two years had a moderate degree of enlargement of both lobes of the thyroid. No cysts are present in the substance of the gland, which is soft and uniform in texture. There are no signs of thyrotoxicosis, but it has been suggested that a hemithyroidectomy should be performed. Is this advisable?*

A.—This patient would seem to have what in old terminology was called a small parenchymatous goitre. As its consistence is uniform, and there are no pressure signs and no evidence of toxicity, it would seem that the only possible grounds (and these are slender) for advising operation would be appearance. Even in this case a hemithyroidectomy would certainly not

produce the required result. Such a goitre as that described in a patient aged 41 obviously needs to be kept under observation, but in the absence of signs and symptoms no operative treatment would appear to be indicated at present.

Terpenes as Industrial Hazards

Q.—*I am medical adviser to a chemical factory producing insecticides. It is proposed to subject pinene, terpene, and camphene to chlorination by exposure to chlorine gas, and I have been consulted about the potential danger of absorption through the skin to workers or customers. The product would be used as an insecticide spray. I would be glad of any information.*

A.—The substances named are constituents or derivatives of turpentine oils, and consist of the essential or volatile oils of numerous plants. Camphene, a colourless crystalline terpene, is prepared from pinene hydrochloride by treating with alcoholic potash. The irritant action of terpenes on the skin is well known. Chlorinated camphene is highly effective against the codling moth and Mexican bean beetle and also against human body lice. In the latter case, human research subjects wore arm and leg coverings which had been treated with chlorinated camphene in concentrations of 0.0025% in an inert base, and under which lice were also placed. All the lice were killed, but apparently no damage was suffered by the human volunteers with this low concentration. No toxicological study has as yet been published regarding the effects of chlorinated terpenes on the human subject, though their insecticidal effect is well established. There may be a toxic risk in the manufacture and handling of the concentrated material, and it would be wise to exercise precautions until experiment has shown that there is no danger, especially since highly chlorinated phenols, diphenyl, and naphthalene are known to have certain toxic properties. For the effects of chlorinated camphene on insect pests the recent papers by Stearns and others (*J. econ. Ent.*, 1947, **40**, and 1948, **41**) should be consulted.

Infertility

Q.—*What is the explanation of the following case of infertility? The husband's post-coital urethral smear shows normal active spermatozoa. In the wife's vaginal-vault specimen one hour after coitus all spermatozoa are dead and show swollen heads. There is no leucorrhoea, and the hysterosalpingogram is normal.*

A.—The important factor is the condition of the spermatozoa after they have invaded the cervical mucus plug. Provided the test is made at about the time of ovulation, the cervical mucus should be well populated by active spermatozoa for many hours following coitus. If spermatozoa are few or immobile, the failure may be caused by factors in the cervical mucus, but is more likely to be due to initial seminal deficiencies. It is not possible to judge seminal efficiency merely by finding active spermatozoa: their quantity, longevity, mobility, and the proportion of abnormal sperms are the diagnostic features. The inquirer might refer to *Problems of Fertility in General Practice*, by Margaret Jackson *et al.* (1948, Cassell).

Tonic Effect of Neoarsphenamine

Q.—*Has neoarsphenamine any virilizing effect or does it act as a tonic when given to a healthy individual?*

A.—The writer knows of no evidence that neoarsphenamine increases virility, but it is a common observation that it has a marked tonic effect on patients suffering from syphilis. Whether this is due to a direct effect of the drug on the patient or to its antisyphilitic therapeutic effect is not clear, since the drug is rarely used, except in comparatively low dosage, in conditions other than syphilis.

Oxyuriasis

Q.—*Would suppositories of gentian violet be efficacious in the treatment of oxyuriasis? My impression is that none of the regular treatments in this country is specific.*

A.—In cases of infection with *Enterobius vermicularis* several members of the same family are usually infected, this communal infection being maintained by the ingestion of infective eggs, both by direct transfer from hand to mouth and by scatter in dust. The larval worms, together with the adults of both sexes, occur in the small intestine, but the females, when gravid, make their way to the rectum and from there pass through the anus to lay their eggs on the perianal skin, a proportion of the "spent" worms regaining the rectum. Treatment with suppositories containing gentian violet would thus affect directly only the gravid females in the rectum and not those higher up in the colon. Though gentian violet may be absorbed by the rectal mucosa and excreted in the gall-bladder, as is suggested by the destruction of liver flukes after oral administration, it seems unlikely that a high concentration in the gut would be attained.

NOTES AND COMMENTS

Leukoplakia and Kraurosis Vulvae.—MR. STANLEY WAY (Newcastle-upon-Tyne) writes: Dr. Elizabeth Hunt (March 5, p. 422) attempts to defend her untenable thesis concerning the value of excision of the leukoplakic vulval skin as a prophylaxis against cancer, and again repeats her erroneous claim that when cancer occurs in association with leukoplakia only the mucous surfaces are involved with tumour, and she calls to her aid two rather ancient references. Even though Blair Bell states that cancer has never been observed in extragenital lesions, I hardly think that this supports Dr. Hunt's thesis, for I do not think that Blair Bell would include the skin of the labium majus as extragenital; in fact in the earlier editions of his textbook (1910 and 1917) he states (p. 411 in both editions) that leukoplakia is pre-malignant and may spread from the vulva to the skin of the neighbouring structures. Dr. Hunt has not correctly followed the statement I made concerning my recent personal experiences. Indeed, on reading again my letter I feel that some ambiguity may arise from my wording, and I would like to repeat my figures more simply: total cases, 20; tumours involving mucous surface only, 2; tumours involving both surfaces, 6; tumours involving skin surfaces only, 12.

Because Dr. Hunt has never seen cancer associated with leukoplakia arising on the skin of the vulva, that does not appear to me a valid reason for her to adopt an ostrich-like attitude and deny its existence. Since writing my first letter I have operated on two further patients who showed small cancers limited to the outer surface of the labium, both of which were associated with leukoplakia. Dr. Hunt hopes that few people will have undergone what she describes as the "ordeal" of Taussig. She will no doubt be horrified to learn that I regularly carry out this operation, not only as a prophylactic against cancer but also to relieve women from the intolerable symptoms of leukoplakia; and I shall continue to do it until some effective alternative as a cure for leukoplakia is forthcoming. As a gynaecologist, I often see these women after the dermatologist has failed to cure them, and the only "ordeal" which many of the patients go through is that of going from dermatologist to dermatologist, from ointment to ointment, and from *x*-ray tube to *x*-ray tube, until in the end they either go mad or develop cancer. Finally, I would suggest that Dr. Hunt joins with me in persuading the Sections of Pathology, Dermatology, and Gynaecology of the Royal Society of Medicine to set up a committee to thrash out this vexed problem of terminology which is causing so much confusion at the present moment.

Family Planning Association.—The general secretary states that the address of the Family Planning Association's Seminological Centre is now 64, Sloane Street, London, S.W.1. Extension of the facilities previously provided (for the investigation and treatment of male subfertility) will include a laboratory for the diagnosis of early pregnancy. The results of the pregnancy test will normally be available within 24 hours of receipt of the specimen of urine. Practitioners wanting to avail themselves of these services or to refer patients are invited to write to the director of the laboratories at the above address. Introductory forms for patients will be sent on request.

Correction.—In the paper entitled "Medical Fitness for Air Travel," by Sir Harold Whittingham, Dr. A. Buchanan Barbour, and Wing Commander J. C. Macgown (April 9, p. 603), the words "into each site" should be deleted from the sentence, "Pneumo-peritoneal refill cases should not have more than 2,000 ml. of air introduced into each site." The same words should be deleted from column 2 of the Table at the cross-heading "Pneumoperitoneum" (**11**, viii).

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone.
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